

SHARP 21SLX SERVICE MANUAL



Table of Contents

[Table of Contents](#)

[SPECIFICATIONS](#)

[IMPORTANT SERVICE NOTES](#)

[BEFORE RETURNING THE RECEIVER](#)

[ADJUSTMENT PRECAUTIONS](#)

[FACTORY SETTING](#)

[SERVICE ADJUSTMENT](#)

[PURITY ADJUSTMENT](#)

[CONVERGENCE ADJUSTMENT](#)

[PAL CHROMA ADJUSTMENT](#)

NTSC CHROMA ADJUSTMENT

SECAM CHROMA ADJUSTMENT

MEMORY MAP

TROUBLE SHOOTING TABLE

NO PICTURE, NO SOUND

SOLID STATE DEVICE BASE DIAGRAM

CHASSIS LAYOUT DIAGRAM

WAVEFORMS

DISCRIPTION OF SCHEMATIC DIAGRAM

REMOTE CONTROL UNIT

TUNER

SCHEMATIC DIAGRAM

MAIN AND CRT SOCKET UNIT

BLOCK DIAGRAM

PRINTED WIRING BOARD ASSEMBLIES

PICTURE TUBE

REPLACEMENT PARTS LIST ELECTRICAL PARTS

MISCELLANEOUS PARTS

SUPPLIED ACCESSORIES

PACKING PARTS

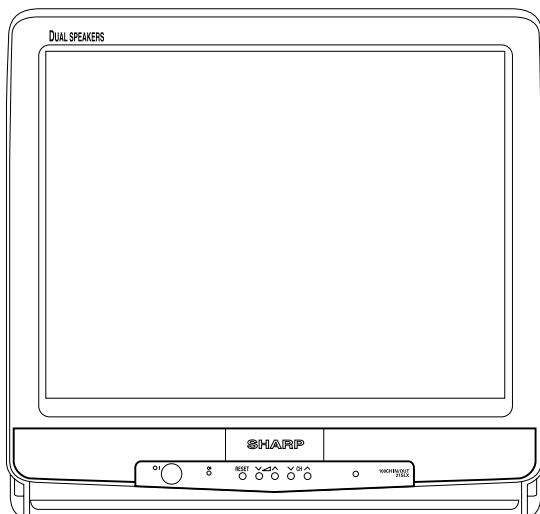
CABINET PARTS

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Other ManualsLib Projects

SHARP**SERVICE MANUAL**

SY8A621SLX///


COLOUR TELEVISION
Chassis No. SP-70
MODEL **21SLX**

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

FEATURE

- Reminder/ON-OFF Timer
- English/Arabic/Chinese/French/Russian/Malay six Language OSD
- CATV (Hyper Band) Ready (Used Frequency Synthesizer tuner)
- 100-CH Program Memory
- AV Multi 7 system
- Full Auto Channel Preset And Auto Channel Skip
- Blue Back Noise Mute
- PAL/SECAM Dual System
- NTSC 4.43/3.58 MHz (AV only)
- Direct Access Remote Control
- NTSC Colour-Comb Filter
- Black Stretch Circuit
- Aperture Control Circuit

CONTENTS

	Page		Page
• SPECIFICATIONS	2	• SCHEMATIC DIAGRAM	
• IMPORTANT SERVICE NOTES	2	■ REMOTE CONTROL UNIT	22
• ADJUSTMENT PRECAUTIONS	3	■ TUNER	23
• SERVICE ADJUSTMENT	6	■ MAIN AND CRT SOCKET UNIT	24
• TROUBLE SHOOTING TABLE	17	• BLOCK DIAGRAM	26
• SOLID STATE DEVICE BASE DIAGRAM	19	• PRINTED WIRING BOARD ASSEMBLIES	28
• CHASSIS LAYOUT DIAGRAM	20	• REPLACEMENT PARTS LIST	
• WAVEFORMS	21	■ ELECTRICAL PARTS	31
• DISCRIPTION OF SCHEMATIC DIAGRAM	22	■ SUPPLIED ACCESSORIES	37
		■ CABINET PARTS	37

WARNING

The chassis in this receiver is partially hot. Use an isolation transformer between the line cord plug and power receptacle, when servicing this chassis.

To prevent electric shock, do not remove cover. No user – serviceable parts inside. Refer servicing to qualified service personnel.

SHARP CORPORATION

SPECIFICATIONS

Convergence	Self Converging System
Focus	Quadra-Potential Electrostatic
Sweep Deflection	Magnetic
Intermediate Frequencies	
Picture IF Carrier	38.9 MHz
Sound IF Carrier Frequency	
6.5 MHz	32.4 MHz
6.0 MHz	32.9 MHz
5.5 MHz	33.4 MHz
Colour Sub-Carrier Frequency	34.47 MHz
Power Input	110-240V AC 50/60 Hz
Power Consumption	88 W
Audio Power Output Rating	3.0 W
	(at Max.)
Speaker	
Size	5 x 9 cm Elliptic 2 pcs
Voice Coil Impedance	8 ohms at 400 Hz
Aerial Input Impedance	
VHF/UHF	75 ohm Unbalanced
Receiving System	CCIR SECAM/PAL B, G, D, K, I
	NTSC 3.58/4.43 MHz (AV Input Only)
Tuner Ranges	
• VHF-Channels	E2 (48.25 MHz) thru E12 (224.25 MHz)
	C1 (49.75 MHz) thru C12 (216.25 MHz)
	S1 (105.25 MHz) thru S41 (463.25 MHz)
• UHF-Channels	E21 (471.25 MHz) thru E69 (855.25 MHz)
	C13 (471.25MHz) thru C57 (863.25 MHz)
Dimensions	
	Width: 496.5 mm
	Height: 463.5 mm
	Depth: 468.8 mm
	Weight (approx.): 22 kg
Cabinet Material	All Plastics

Specifications are subject to change without prior notice.

IMPORTANT SERVICE NOTES

Maintenance and repair of this receiver should be done by qualified service personnel only.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove static charge from it by connecting a 10k ohm Resistor in series with an insulated wire (such as a test probe) between picture tube dag and 2nd anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely

X-RAY

This receiver is designed so that any X-Ray radiation is kept to an absolute minimum. Since certain malfunctions or servicing may produce potentially hazardous radiation with prolonged exposure at close range, the following precautions should be observed:

1. When repairing the circuit, be sure not to increase the high voltage to more than 29.0 kV (at beam 0 μ A) for the set.
2. To keep the set in a normal operation, be sure to make it function on 25.3 kV $\pm$ 1.5 kV (at beam 1100 μ A) in the case of the set. The set has been factory adjusted to the above-mentioned high voltage.
✗ If there is a possibility that the high voltage fluctuates as a result of the repairs, never forget to check for such high voltage after the work.
3. Do not substitute a picture tube with unauthorized types and/or brands which may cause excess X-ray radiation.

BEFORE RETURNING THE RECEIVER

Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators etc.

ADJUSTMENT PRECAUTIONS

This model's settings are adjusted in two different ways: through the I²C bus control and in the conventional analog manner. The adjustment via the I²C bus control includes preset-only items and variable data.

1. Calling the service mode by the microprocessor

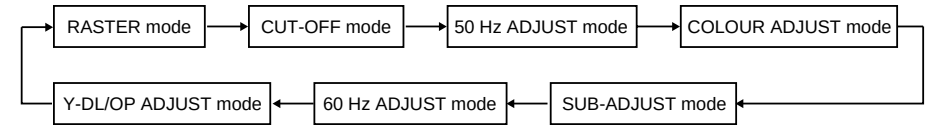
- ① Set the switch S1006 to the service mode position, and the microprocessor is put in the service mode (adjustment through the I²C bus control).
- ② Press the CH UP/DOWN keys on the remote controller to select the modes one by one.
- ③ Press the CH UP/DOWN keys on the remote controller to select the modes in the order opposite to the above step ②.
- ④ Using the VOLUME UP/DOWN keys on the remote controller, the data can be modified.
- ⑤ Set the switch S1006 to the normal mode (OFF) position, and the microprocessor is put out of the service mode.

2. Factory presettings

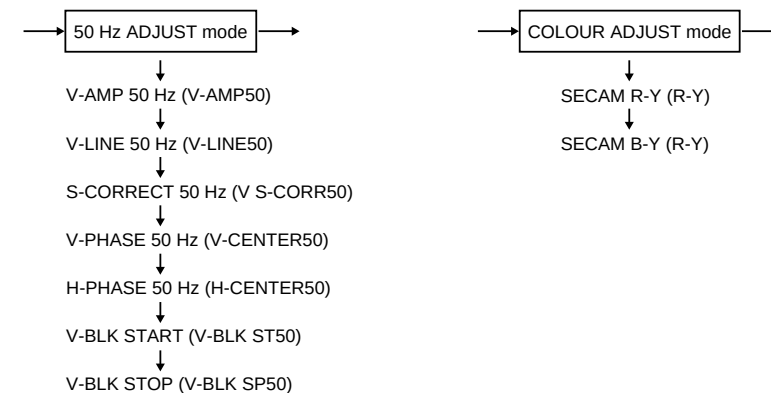
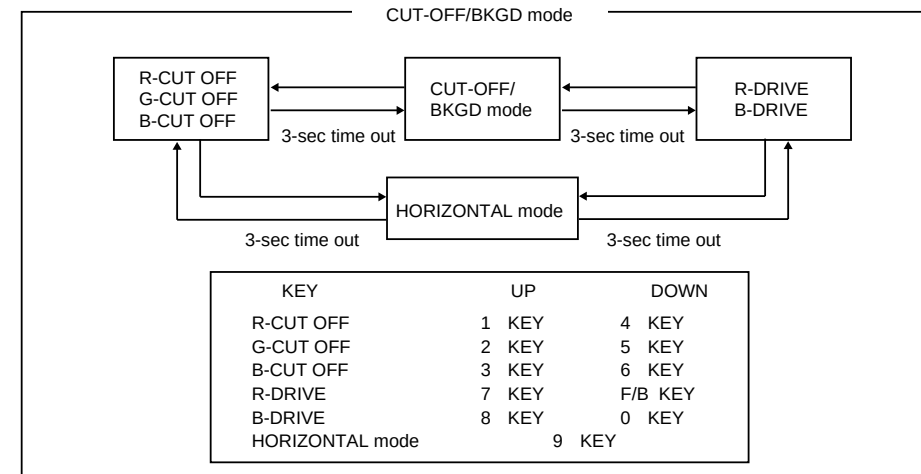
- ① Set the switch S1006 to the service mode position and turn on the main power switch. Initial values are automatically preset only when a new E²PROM is used (judgment with the first 4 bytes).
 - ② The initial data are preset as listed on pages 4 and 5.
 - ③ Keep in mind that some settings should be modified, and the others should remain as preset.
- Once the chassis has been put together, be sure to set the switch S1006 to the service mode position first and then turn on the main power switch (see the step 2.-① above). Turning on the power without initializing the E²PROM may cause a flow of excess beam current.

SERVICE MODE

- (1) Press the specific keys to change the modes as follows.



In the direction of arrow : CH DOWN key
In the opposite direction : CH UP key



In the direction of arrow : CH DOWN key
In the opposite direction : CH UP key

In the direction of arrow : CH DOWN key
In the opposite direction : CH UP key

* The characters in parentheses appear on the on-screen display.

SUB-ADJUST mode

↓
 SUB CONTRAST (SUB CON)
 ↓
 SUB BRIGHT (SUB BRI)
 ↓
 SUB COLOUR (SUB COL)
 ↓
 SUB SUBTINT (SUB TIN)
 ↓
 SUB SHARPNESS (SUB SHARP)
 ↓
 Y-SUB CONTRAST (Y SUB CON)

In the direction of arrow : CH DOWN key
 In the opposite direction : CH UP key

60Hz ADJUST mode

↓
 V-AMP 60 Hz (V-AMP60)
 ↓
 V-LINE 60 Hz (V-LINE60)
 ↓
 VS-CORRECT 60 Hz
 ↓
 V-PHASE 60 Hz (V-CENTER60)
 ↓
 H-PHASE 60 Hz (H-CENTER60)
 ↓
 V-BLK START 60 Hz (V-BLK ST60)
 ↓
 V-BLK STOP 60 Hz (V-BLK SP60)

In the direction of arrow : CH DOWN key
 In the opposite direction : CH UP key

Y-DL/OPTION mode

↓
 Y DELAY PAL (DT PAL TV/AV)
 ↓
 Y DELAY SECAM (DT SECAM TV/AV)
 ↓
 Y DELAY NTSC (DT NTSC TV/AV)
 ↓
 Y DELAY B/W (DT BW TV/AV)
 ↓
 VIDEO MUTE ON/OFF (V-MUTE)
 ↓
 VIDEO 2 ON/OFF (AV2)
 (DELAY A/V effective in A/V mode)

* The characters in parentheses
 appear on the on-screen display.

* When the modes are switched, the last service mode data are stored into the E²PROM.

* In the service mode, the user data are preset as follows.

	User data
CONTRAST	MAX (64/64)
COLOUR	CENT (32/64)
BRIGHTNESS	CENT (32/64)
TINT	CENT (32/64)
SHARPNESS	CENT (32/64)
S-VOLUME	MIN (1/64)
BLUE BACK	OFF
C SYSTEM	AUTO
S SYSTEM	*1

*1 : Settings of each channel
 before switching to the service
 mode.

* The following keys are used to go directly to their respective modes.

Mode	Key input
H-CENTER 50	PICTURE
V-CENTER 50	TEXT
V-AMP 50	INDEX
V S CORR 50	RED
V-LINE 50	GREEN
SUB CONT	CANCEL
Y SUB CONT	REVEAL
SUB COLOUR	TIMED PAGE
SUB BRIGHT	SIZE
SUB TINT	HOLD
SUB SHARP	RESET
R-Y	YELLOW
B-Y	CYAN
A/V2 ON/OFF	SKIP
VIDEO MUTE	BLUE BACK

4-1

* To go to the service mode, the data at the E²PROM's addresses 00H thru 03H are read. If the data are not as given below, the E²PROM is initialized according to the table below.

Address :	Data
00H :	22H
01H :	29H
02H :	13H
03H :	48H

E ² PROM item	Data adjustable range	Data initial value	Remarks
(00H)	—————	22H	
(01H)	—————	29H	
(02H)	—————	13H	
(03H)	—————	48H	
R CUT OFF	0 ~ 255	0	
G CUT OFF	0 ~ 255	0	
B CUT OFF	0 ~ 255	0	
G DRIVE	0 ~ 255	127	
B DRIVE	0 ~ 255	127	
50Hz V-AMP	0 ~ 127	58	1 *1
50Hz V-LINEARITY	0 ~ 31	16	-2 *1
50Hz S-CORRECTION	0 ~ 127	67	7 *1 *2
50Hz V-PHASE	0 ~ 7	5	-3 *1
50Hz H-PHASE	0 ~ 31	7	+5 *1
V-BLK ST 50	0 ~ 63	58→63 (50Hz)	*3
V-BLK SP 50	0 ~ 127	25	
60Hz V-AMP	0 ~ 127		
60Hz V-LINEARITY	0 ~ 31		
60Hz S-CORRECTION	0 ~ 127		*2
60Hz V-PHASE	0 ~ 7		*4
60Hz H-PHASE	0 ~ 31		
60Hz V BLK ST	0 ~ 63	60→63 (60Hz)	
60Hz V BLK SP	0 ~ 127	20	
SECAM R-Y	0 ~ 15	10	
SECAM B-Y	0 ~ 15	6	
SUB-CONTRAST	0 ~ 255	255	*2
SUB-BRIGHT	0 ~ 255	127	
SUB-COLOUR	0 ~ 255	110	
SUB-TINT	0 ~ 127	70	
SUB-SHARPNESS	0 ~ 63	28	
Y SUB-CONTRAST	0 ~ 31	18	*2
DT PAL TV/AV	0 ~ 7	2/2	*2
DT SECAM TV/AV	0 ~ 7	4/4	*2
DT NTSC TV/AV	0 ~ 7	2/2	*2
DT B/W TV/AV	0 ~ 7	2/2	*2
V-MUTE	ON/OFF	OFF	
A/V 2	ON/OFF	ON→OFF	
AFT/SKIP	0 ~ 1	OFF/ON	
C-SYSTEM	0 ~ 1	AUTO	
S-SYSTEM	—————	B/G	
NVM With all the adjustments complete, do not change the data of addresses 00H thru 03H. Other-			
*3 wise the E ² PROM will be initialized when the AC power is turned on.			

*1 : These data are additionally adjusted for 60Hz based on the 50Hz settings.

*2 : Unless otherwise specified, these data are fixed and need no adjustment.

4-2

*3 : After initialized, must be change data to "63" (50Hz and 60Hz).

*4 : Only 0 through 5 must be used in changing the data.

INITIAL SETTINGS OF CHANNEL SELECTION DATA

(1) Make an entry of MCL1 in the service mode in order to set the following channel selection data to the E²PROM. And select the POS1 channel. (An MCL2, -3 or -4 input makes different settings.)

POS	CH NO	Receiving frequency (MHz)	S-System
1	E-2	48.25	B/G
2	E-3	55.25	B/G
3	E-4	62.25	B/G
4	OI-3	77.25	D/K
5	E-5	175.25	B/G
6	OI-7	183.25	D/K
7	OI-8	196.25	D/K
8	E-10	210.25	B/G
9	E-12	224.25	B/G
10	I-23	487.25	I
11	E-25	503.25	B/G
12	E-34	575.25	B/G
13	E-37	599.25	B/G
14	OI-42	639.25	D/K
15	I-54	735.25	I
16	E-58	767.25	B/G
17	E-64	815.25	B/G
18	I-69	855.25	I
19	J-6	183.25	
20	J-8	193.25	
21	J14	477.25	
22	J-38	621.25	
23	J-50	693.25	
24	S-2	112.25	B/G
25	S-10	168.25	B/G
26	SKIP OFF	FREE	
27	S-20	294.25	B/G
28	S-41	463.25	B/G
29	SKIP OFF	FREE	
30			
31			
32			

FACTORY SETTING

(1) The following key-in data have been factory-set for the E²PROM.

Item	Setting
SKIP	OFF
AFT	ON
C-SYSTEM	AUTO
S-SYSTEM	*1
LAST POWER	ON
LAST TV/AV	TV
DIGIT	1DIG
LANGUAGE	*1
BLUE BACK	ON
LAST POS	1
LAST FB POS	1
VOLUME	MIN
CONTRAST	MAX
COLOUR	CENT
BRIGHTNESS	CENT
TINT	CENT
SHARPNESS	CENT

*1 : For settings, refer to the Job Instruction Sheet.

The factory setting of S-SYSTEM item will be 1, 2 or 3 for all the channels.

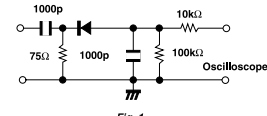
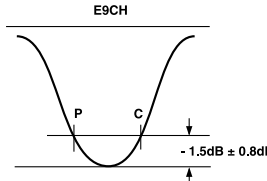
1 : B/G 2 : I 3 : D/K

SERVICE ADJUSTMENT

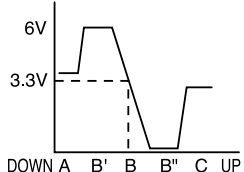
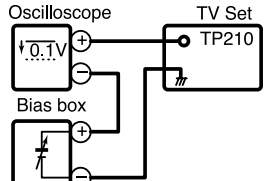
115V ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	115V adjustment: R711	1. Receive the E-5CH (monoscope pattern) signal. 2. Using the remote controller, call the P-NORM mode. 3. Connect a beam ammeter between TP602 and TP603. • Ammeter's full-scale : 3 mA range • Ammeter's positive (+) lead : TP603 • Ammeter's negative (-) lead : TP602 4. Take the beam ammeter reading to make sure that the beam current is between 900 μA and 1100 μA. * If not, readjust the FBT screen control to obtain the beam current of 900-1100 μA. 5. Connect a digital voltmeter to TP701. 6. Adjust R711 so that the digital voltmeter should read 115 $\pm$0.5 V.	

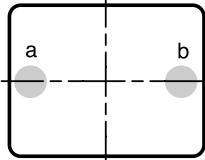
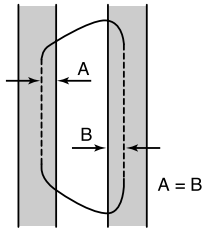
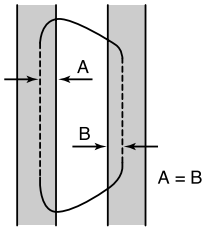
PIF CHECKING

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	Tuner IFT (preset): TU201	1. Get the tuner ready to receive the E-9CH signal, but with no signal input. Adjust the PLL data. 2. Connect the sweep generator's output cable to the tuner antenna. (RF sweep) 3. Adjust the sweep generator's output level to 80 dBμV. 4. Connect the response lead (use a low-impedance probe with wave detector; see Fig. 1) to the tuner's IF output terminal. (This terminal must have the probe alone connected.) 5. Set the RF AGC voltage to 0-6 V with no contact with the waveform. 6. Adjust the tuner IF coil to obtain the waveform as shown in Fig. 2. Note: Be sure to keep the tuner cover in position during this adjustment.	IF-OUT  Fig. 1.  Fig. 2.

PIF/AFT/AGC ADJUSTMENT

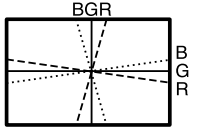
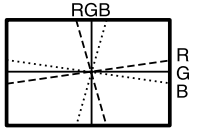
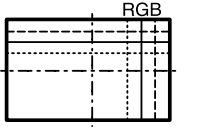
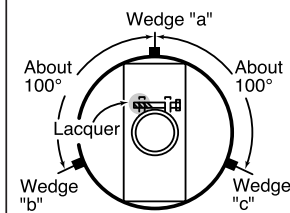
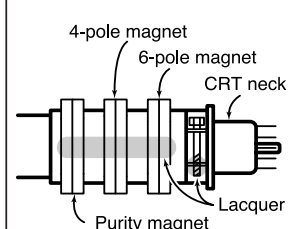
No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	VCO adjustment: T203	1. Disconnect the antenna from the tuner antenna terminal. 2. Apply DC voltage to pin (4)(IF AGC) of IC201. • DC voltage: 6.0 V (allowable +0.1 V) 3. Using a digital voltmeter, measure the DC voltage at pin (20)(PLL FIL) of IC201. * The digital voltmeter must be able to take readings down to the third decimal place. 4. Relieve pin (4) of IC201 of the DC voltage. 5. Reconnect the antenna in position and receive the E-12CH signal. (With the AFT off, adjust the receiving frequency to 224.25 MHz.) 6. Connect the DC digital voltmeter to pin (20) of IC201. Adjust T203 so that the voltmeter should read the same voltage as in Step 3. - Allowable error : 0.015 V (20 kHz)	* Warm up the unit for longer than 10 minutes in advance. * 10 kHz at about 0.007 V. * Position the T203 core in the range in which the E-12CH signal can be received.
2	AFT adjustment: T204	1. Receive the E-12CH (PAL colour bar) signal. If this signal is not available, any signal above the E-5CH band is acceptable. • Field strength : 55-80 dBμV Make sure the frequency is almost the same as that of the received channel ($\pm$30 kHz). 2. Using the channel setting control, make a frequency of 224.25 MHz appear on the screen (the AFT turns off). If any other channel than E-12CH is received, make its frequency on the screen. (The AFT turns off when the on-screen display turns yellow.) 3. Turn T204 clockwise to have a 6-V point, and counterclockwise to have a 0.2-V point. Position the coil at the center of these two points. 4. Adjust T204 so that the DC voltage at pin (1) (AFT OUT terminal) of IC201 be 3.3 $\pm$0.1 V. (See Fig. 3)	DC voltage at TP201  Fig. 3 * Turn the core counterclockwise for the UP direction, and clockwise for the DOWN direction. Adjust the T201 core to point B (between B' and B''). (Points A and C are rejectable.)
3	RF AGC cut-in adjustment: R216	1. Receive the E-12CH (PAL colour bar) signal. • Field strength : 57 $\pm$1 dBμV (75 ohms open) 2. Connect the oscilloscope to TP210, as shown in Fig. 4.  Fig. 4 • Bias box: About 6.5 V 3. Turn R216 to have the highest voltage. 4. Turn R216 slowly in the opposite direction until the voltage goes down 0.1 V below the highest level. 5. Adjust the signal level to 63-67 dBμV and make sure there is no noise. 6. Now adjust the signal level to 90-95 dBμV and make sure there is no chrominance modulation beat.	Note: If a 50ohm field strength meter is used without a 50/75 impedance converter, set the field strength to 55 $\pm$1 dBμV. Pay attention to a loss that would be caused with the converter.

PURITY ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	Purity adjustment	1. Using the remote controller, make the screen colour green-only. Adjust the contrast control to have a beam current of about 700 μA. 2. Degauss the cathode ray tube enough with the degaussing coil. 3. Keep the purity magnet in the zero magnetic field in advance. Roughly adjust the convergence. 4. Observe the points "a" and "b", as shown in Fig. 5-1, through a microscope. Adjust the landing to the rank "A" requirements. 5. Adjust the raster rotation to "0" eastward. 6. Tighten up the deflection coil screws. • Tightening torque: 108 $\pm$20 N (11 $\pm$2 kgf) 7. While observing the cathode ray tube corners, apply the magnet sheet to have the landing at rank "A". Note: Before starting this adjustment, warm up the unit for 30 minutes or longer at a beam current of over 700 μA. Note: Set the service switch S1001 to call the service mode and press the single-colour key on the process remote controller to get the green-only screen. * Each time the single-colour key is pressed, the screen colour changes as follows. <pre> graph LR A[GREEN ONLY SCREEN] --> B[BLUE ONLY SCREEN] B --> C[RED ONLY SCREEN] C --> D[SINGLE-COLOUR MODE CLEARED] D --> A </pre>	 Fig. 5-1  Fig. 5-2 Rank "A" (on the right of the CRT)  Fig. 5-3 Rank "A" (on the left of the CRT) * Whether in the service mode or not, hold down the single-colour key for 1 second or longer and the service mode is called. The TEXT key or the R.G.Cy key may be used instead to provide the single-colour screens.

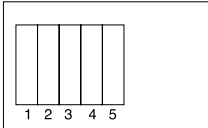
7-1

CONVERGENCE ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	Convergence adjustment (to be done after the purity adjustment)	1. Receive the E-2CH (crosshatch pattern) signal. 2. Using the remote controller, call the Normal mode. STATIC CONVERGENCE 1. Turn the 4-pole magnet to a proper opening angle in order to superimpose the blue and red colours. 2. Turn the 6-pole magnet to a proper opening angle in order to superimpose the green colour over the blue and red colours. DYNAMIC CONVERGENCE 1. Adjust the convergence on the fringes of the screen in the following steps. a) Fig. 6-1: Drive the wedge at point "a" and swing the deflection coil upward. b) Fig. 6-2: Drive the wedges at points "b" and "c" and swing the deflection coil downward. c) Fig. 6-3: Drive the "c" wedge deeper and swing the deflection coil rightward. d) Fig. 6-4: Drive the "b" wedge deeper and swing the deflection coil leftward. 2. Fix all the wedges on the cathode ray tube and apply glass tape over them. 3. Apply lacquer to the deflection yoke lock screw, magnet unit (purity, 4-pole and 6-pole magnets), and magnet unit lock screw. Finally receive the red-only and blue-only signals and make sure there is no other colour mixed on the screen.	 Fig. 6-1  Fig. 6-2  Fig. 6-3  Fig. 6-4  Fig. 6-5  Fig. 6-6

7-2

CRT CUT-OFF, BACKGROUND AND SUB-CONTRAST ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	CRT cut-off service mode: I²C bus data adjustment	1. Receive the E-5CH (monoscope pattern) signal. 2. Using the remote controller, call up the P-NORM mode. 3. Turn on the service switch and select the cut-off/background mode. 4. Set the screen control to 0/10 position. 5. Press the "9" key on the remote controller to reach the horizontal centering mode. 6. Turn the screen control clockwise until the horizontal raster of the first glimmering colour becomes slightly visible. 7. Adjust the cut-off data of the other two colours until the horizontal raster becomes whitish. 8. Turn the screen control counterclockwise until the horizontal raster disappears. Note: Before starting this adjustment, warm up the unit for 30 minutes or longer at a beam current of over 700 μA . 9. Press the "9" key on the remote controller to call the NORMAL mode. 10. Using the remote controller, call the sub-brightness setting mode. (Receive the E-2CH signal.) 11. Set the sub-brightness data so that the third black portion (1st to 5th counted from the left of the screen) of the window pattern looks sinking. Note: The service mode adjustment in the above steps 10. and 11. should be carried out after the white balance and background adjustments.	* First of all, make sure that the R/G/B cut-off and B/G drive data are all initial values. Note: R CUT OFF UP "1" KEY DOWN "4" KEY G CUT OFF UP "2" KEY DOWN "5" KEY B CUT OFF UP "3" KEY DOWN "6" KEY The data can be turned up and down with the above keys.  Make sure all the 1st, 2nd and 3rd black portions are at the same black level.

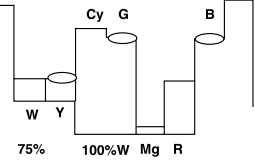
CRT CUT-OFF, BACKGROUND AND SUB-CONTRAST ADJUSTMENT
(Continued)

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
2	White balance and background service mode: I²C bus data adjustment	1. Receive the E-5CH (monoscope pattern) signal. 2. Using the remote controller, call up the Video Normal mode. 3. Connect the beam ammeter between TP601 and TP602. 4. Make sure the beam current is about 1,100 μA . 5. Adjust the G-drive and B-drive data to have a colour temperature of 12,300°K (white). 6. Adjust the contrast and brightness controls to have the beam current of 200 μA. Now check the background colour. If the colour temperature is not as specified, go back to No. 1 on the preceding page. Note: Before starting this adjustment, warm up the unit for 30 minutes or longer at a beam current of over 700 μA.	* 12300°K X : 0.273 Y : 0.276 (with colour temperature meter CA-100 (MINOLTA).) Note: G-DRIVE UP "7" KEY DOWN "↶" KEY B-DRIVE UP "8" KEY DOWN "0" KEY The data can be turned up and down with the above keys.
3	Maximum beam current (check item)	1. Receive the E-5CH (monoscope pattern) signal. 2. Using the remote controller, call up the Video Normal mode. 3. Connect the beam ammeter between TP602 and TP603. ● Ammeter's full-scale : 3 mA range ● Ammeter's positive (+) lead : TP603 ● Ammeter's negative (-) lead : TP602 4. Make sure the beam current is 1,100 $\pm$ 100 μA. Note: Before starting this adjustment, warm up the unit for 30 minutes or longer at a beam current of over 700 μA .	

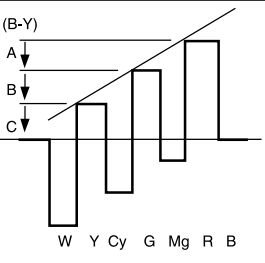
HORIZONTAL AND VERTICAL CIRCUIT ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	V-AMP 50 V-LINEARITY - 50 Hz V-S CORRECTION - 50 Hz V-SHIFT 50 (V-CENTER) H-SHIFT (50) (H-CENTER)	1. Adjust the overscan to 9% (E-5). 1. Adjust to get the best linearity. 1. Preset (readjust if the linearity is poor). 1. Align the screen center with the cathode ray tube's geometrical center (E-5). 1. Align the screen center with the cathode ray tube's geometrical center (E-5). Note: For the V-HEIGHT 60, V-LINEARITY 60, V-S CORRECTION 60, V-SHIFT 60 and H-SHIFT 60 adjustments, their corrected data are automatically entered when the corresponding 50 Hz mode adjustments are made.	The selected channels in parentheses have the following signals. (E-2): crosshatch pattern (50 Hz) signal (E-5): monoscope pattern (50 Hz) signal
2	Focus adjustment	1. Receive the E-5CH (monoscope pattern) signal. 2. Using the remote controller, call the Video Normal mode. 3. Adjust the focus control so that the screen be in good focus.	

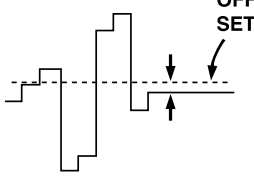
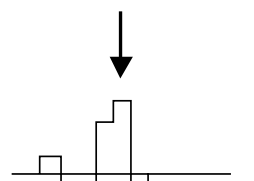
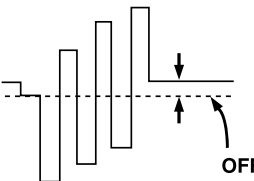
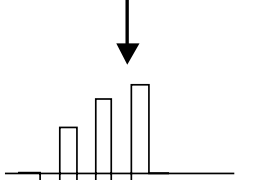
PAL CHROMA ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	Sub-colour adjustment: I²C bus adjustment	1. Receive the E-12CH (PAL colour bar) signal. 2. Using the remote controller, call the Video Normal mode. 3. Connect the oscilloscope to TP852 (RED cathode). (Use a 10 : 1 probe.) • Range : 2 V/div. • Sweep time : 20 μ sec/div. 4. Using the remote controller, call the sub-colour adjustment mode. Adjust the sub-colour data so that the 75% white and red portions of the PAL colour bar be at the same level. See Fig. 7 . 5. Clear the adjustment mode. (Now the 100% white and red portions will be at the same level. The sub-colour data is up 20.) * Pin (3)(K) may be used instead of TP852 (RED cathode) for this adjustment. In such case, keep in mind that the polarity of the waveform is inverted.	 Fig. 7.

NTSC CHROMA ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	Sub-tint adjustment: I²C bus adjustment	1. Call the sub-tint adjustment mode. Receive the NTSC 3.58 colour bar signal in the A/V mode. 2. Connect the oscilloscope to pin (36)(B-Y) of IC801. • Range : 20 mV/div. (AC) • Sweep time : 20 μ sec/div. (Use a 10 : 1 probe.) 3. Adjust the sub-tint data to obtain the waveform as shown in Fig. 8 . 4. Clear the adjustment mode.	 Fig. 8. A=B=C

SECAM CHROMA ADJUSTMENT

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	SECAM black level (R-Y/B-Y) adjustment: I²C bus adjustment	1. Receive the Oi-5CH (SECAM colour bar) signal. 2. Call the SECAM black level adjustment R-Y mode. 3. Connect the oscilloscope to pin (34)(R-Y OUT, TP802) of IC801. • Range : 10 mV/div. • Sweep time : 20 μsec/div. (Use a 10 : 1 probe.) 4. Adjust the R-Y data so that the offset between the no-signal line and the signal line be minimum. See Fig. 9-1(b). 5. Call the SECAM black level adjustment B-Y mode. 6. Reconnect the oscilloscope to pin (33)(B-Y OUT, TP801) of IC801. The conditions are just the same as in Step 3. 7. Adjust the B-Y data so that the offset between the no-signal line and the signal line be minimum. See Fig. 9-2(b).	 Fig. 9-1 (a)  Fig. 9-1 (b)  Fig. 9-2 (a)  Fig. 9-2 (b)

10-1

PROTECTOR PERFORMANCE CHECK

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	Beam protector	1. Receive the E-5CH (monoscope pattern) signal. 2. Set the contrast control to maximum. 3. Set the brightness control to maximum. 4. Make a short-circuit between the collector and emitter of Q851, Q852 or Q853 and make sure that the protector is activated and the stand-by mode is called.	* Short-circuit any of the Q851, Q852 and Q853.
2	High-voltage protector	1. Receive the E-5CH (monoscope pattern) signal. 2. Connect the bias box to the cathode (R635 side) of D607. 3. Adjust the bias box voltage to 18 V and make sure that the protector is not activated. 4. Adjust the bias box voltage to 27 V and make sure that the protector is not activated.	
3	Other protectors	1. In checking the performance of other protectors — for example, the one against shorting of smoothing electrolytic capacitor of +B line —, pay attention not to damage or deteriorate any related element.	

A/V INPUT AND OUTPUT CHECK

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	Video and audio output check	1. Receive the E-12CH colour bar (100% white colour bar, 400 Hz, 100% modulation audio) signal. 2. Terminate the video output with a 75 ohm impedance. Make sure the output is as specified (1.0 Vp-p $\pm$3 dB). 3. Terminate the audio output with a 10k ohm impedance. Make sure the output is as specified (1.76 Vp-p $\pm$3 dB).	
2	Video and audio input check	1. Using the TV/AV key on the remote controller, make sure that the modes change in the order of TV, AV and TV again and that the video and audio outputs are according to the input and output terminals for each mode.	

10-2

FUNCTION CHECK (VIDEO AND AUDIO)

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
1	CONTRAST key	1. Receive the E-5CH (monoscope pattern) signal. 2. Select the contrast on the P-MODE screen. 3. The contrast must be changeable with the UP/ DOWN key.	
2	COLOUR key	1. Receive the E-12CH (PAL colour bar) signal. 2. Select the colour on the P-MODE screen. 3. The colour must be changeable with the UP/ DOWN key.	
3	BRIGHTNESS key	1. Receive the E-5CH (monoscope pattern) signal. 2. Select the brightness on the P-MODE screen. 3. The black level must be changeable with the UP/ DOWN key.	
4	TINT key	1. Receive the NTSC colour bar signal. (A/V) 2. Select the tint on the P-MODE screen. 3. The tint must be changeable toward green with the UP key and toward red with the DOWN key.	
5	PIC-NOR. key	1. Press the NOR. key on the P-MODE screen to make sure all the displayed items are at normal settings. See below for the normal settings. ● Contrast : MAX ● Colour : CENTER ● Brightness : CENTER ● Tint : CENTER ● Sharpness : CENTER	* The contrast, colour, brightness, tint and sharpness settings are all normal when these items do not appear on the screen.
6	SHARPNESS key	1. Receive the E-5CH (monoscope pattern) signal. 2. Select the sharpness on the P-MODE screen. 3. The sharpness must be changeable with the UP/ DOWN key.	
7	Channel sign display colour	1. The display colour of all the channel (0-99) signs must be green. Keep the AFT on.	

FUNCTION CHECK (VIDEO AND AUDIO) (Continued)

No.	Adjusting point	Adjusting procedure/conditions	Waveform and others
8	COLOUR SYSTEM key	1. Receive the E-12CH (PAL colour bar) signal. Using the COLOUR SYSTEM key, select a mode other than PAL and make sure the colour system does not work properly. 2. Receive the E-10CH (SECAM colour bar) signal. Using the COLOUR SYSTEM key, select a mode other than SECAM and make sure the colour system does not work properly. 3. Receive the E-37CH (NTSC 4.43 colour bar) signal. Using the COLOUR SYSTEM key, select a mode other than N4.43 and make sure the colour system does not work properly. 4. Receive the NTSC 3.58 colour bar (A/V) signal. Using the COLOUR SYSTEM key, select a mode other than N3.58 and make sure the colour system does not work properly.	
9	SOUND SYSTEM key	1. Receive the Oi-9CH (PAL colour bar signal.) Using the SOUND SYSTEM key, select B/G and I modes and make sure the sound system does not work properly. 2. Receive the E-23CH (monoscope pattern) signal. Using the SOUND SYSTEM key, select B/G and D/K modes and make sure the sound system does not work properly. 3. Receive the E-12CH (colour bar) signal. Using the SOUND SYSTEM key, select I and D/K modes and make sure the sound system does not work properly.	
10	Noise mute check	1. Receive the E-12CH (PAL colour bar) signal. 2. Turn up the sound volume to maximum and make sure the sound is heard normally from the speakers. Then cut off the signal. 3. Make sure the sound muting functions. 4. Finally turn down the sound volume to minimum.	

21R2 series (RH-iX2938)

MEMORY MAP

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
000	Initialization judgment data "22"									Other than \$22	\$22
001	Initialization judgment data "29"									Other than \$29	\$29
002	Initialization judgment data "13"									Other than \$13	\$13
003	Initialization judgment data "48"									Other than \$48	\$48
004	PLL data (upper)								CH0		
005	PLL data (lower)										
006	PLL data (upper)								CH1		
007	PLL data (lower)										
008	PLL data (upper)								CH2		
009	PLL data (lower)										
00A	PLL data (upper)								CH3		
00B	PLL data (lower)										
00C	PLL data (upper)								CH4		
00D	PLL data (lower)										
00E	PLL data (upper)								CH5		
00F	PLL data (lower)										
010	PLL data (upper)								CH6		
011	PLL data (lower)										
012	PLL data (upper)								CH7		
013	PLL data (lower)										
014	PLL data (upper)								CH8		
015	PLL data (lower)										
016	PLL data (upper)								CH9		
017	PLL data (lower)										
018	PLL data (upper)								CH10		
019	PLL data (lower)										
01A	PLL data (upper)								CH11		
01B	PLL data (lower)										
01C	PLL data (upper)								CH12		
01D	PLL data (lower)										
01E	PLL data (upper)								CH13		
01F	PLL data (lower)										
020	PLL data (upper)								CH14		
021	PLL data (lower)										
022	PLL data (upper)								CH15		
023	PLL data (lower)										
024	PLL data (upper)								CH16		
025	PLL data (lower)										
026	PLL data (upper)								CH17		
027	PLL data (lower)										
028	PLL data (upper)								CH18		
029	PLL data (lower)										
02A	PLL data (upper)								CH19		
02B	PLL data (lower)										
02C	PLL data (upper)								CH20		
02D	PLL data (lower)										
02E	PLL data (upper)								CH21		
02F	PLL data (lower)										

12-1

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
030	PLL data (upper)								CH22		
031	PLL data (lower)										
032	PLL data (upper)								CH23		
033	PLL data (lower)										
034	PLL data (upper)								CH24		
035	PLL data (lower)										
036	PLL data (upper)								CH25		
037	PLL data (lower)										
038	PLL data (upper)								CH26		
039	PLL data (lower)										
03A	PLL data (upper)								CH27		
03B	PLL data (lower)										
03C	PLL data (upper)								CH28		
03D	PLL data (lower)										
03E	PLL data (upper)								CH29		
03F	PLL data (lower)										
040	PLL data (upper)								CH30		
041	PLL data (lower)										
042	PLL data (upper)								CH31		
043	PLL data (lower)										
044	PLL data (upper)								CH32		
045	PLL data (lower)										
046	PLL data (upper)								CH33		
047	PLL data (lower)										
048	PLL data (upper)								CH34		
049	PLL data (lower)										
04A	PLL data (upper)								CH35		
04B	PLL data (lower)										
04C	PLL data (upper)								CH36		
04D	PLL data (lower)										
04E	PLL data (upper)								CH37		
04F	PLL data (lower)										
050	PLL data (upper)								CH38		
051	PLL data (lower)										
052	PLL data (upper)								CH39		
053	PLL data (lower)										
054	PLL data (upper)								CH40		
055	PLL data (lower)										
056	PLL data (upper)								CH41		
057	PLL data (lower)										
058	PLL data (upper)								CH42		
059	PLL data (lower)										
05A	PLL data (upper)								CH43		
05B	PLL data (lower)										
05C	PLL data (upper)								CH44		
05D	PLL data (lower)										
05E	PLL data (upper)								CH45		
05F	PLL data (lower)										

12-2

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
060	PLL data (upper)								CH46		
061	PLL data (lower)										
062	PLL data (upper)								CH47		
063	PLL data (lower)										
064	PLL data (upper)								CH48		
065	PLL data (lower)										
066	PLL data (upper)								CH49		
067	PLL data (lower)										
068	PLL data (upper)								CH50		
069	PLL data (lower)										
06A	PLL data (upper)								CH51		
06B	PLL data (lower)										
06C	PLL data (upper)								CH52		
06D	PLL data (lower)										
06E	PLL data (upper)								CH53		
06F	PLL data (lower)										
070	PLL data (upper)								CH54		
071	PLL data (lower)										
072	PLL data (upper)								CH55		
073	PLL data (lower)										
074	PLL data (upper)								CH56		
075	PLL data (lower)										
076	PLL data (upper)								CH57		
077	PLL data (lower)										
078	PLL data (upper)								CH58		
079	PLL data (lower)										
07A	PLL data (upper)								CH59		
07B	PLL data (lower)										
07C	PLL data (upper)								CH60		
07D	PLL data (lower)										
07E	PLL data (upper)								CH61		
07F	PLL data (lower)										
080	PLL data (upper)								CH62		
081	PLL data (lower)										
082	PLL data (upper)								CH63		
083	PLL data (lower)										
084	PLL data (upper)								CH64		
085	PLL data (lower)										
086	PLL data (upper)								CH65		
087	PLL data (lower)										
088	PLL data (upper)								CH66		
089	PLL data (lower)										
08A	PLL data (upper)								CH67		
08B	PLL data (lower)										
08C	PLL data (upper)								CH68		
08D	PLL data (lower)										
08E	PLL data (upper)								CH69		
08F	PLL data (lower)										

13-1

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
090	PLL data (upper)								CH70		
091	PLL data (lower)										
092	PLL data (upper)								CH71		
093	PLL data (lower)										
094	PLL data (upper)								CH72		
095	PLL data (lower)										
096	PLL data (upper)								CH73		
097	PLL data (lower)										
098	PLL data (upper)								CH74		
099	PLL data (lower)										
09A	PLL data (upper)								CH75		
09B	PLL data (lower)										
09C	PLL data (upper)								CH76		
09D	PLL data (lower)										
09E	PLL data (upper)								CH77		
09F	PLL data (lower)										
0A0	PLL data (upper)								CH78		
0A1	PLL data (lower)										
0A2	PLL data (upper)								CH79		
0A3	PLL data (lower)										
0A4	PLL data (upper)								CH80		
0A5	PLL data (lower)										
0A6	PLL data (upper)								CH81		
0A7	PLL data (lower)										
0A8	PLL data (upper)								CH82		
0A9	PLL data (lower)										
0AA	PLL data (upper)								CH83		
0AB	PLL data (lower)										
0AC	PLL data (upper)								CH84		
0AD	PLL data (lower)										
0AE	PLL data (upper)								CH85		
0AF	PLL data (lower)										
0B0	PLL data (upper)								CH86		
0B1	PLL data (lower)										
0B2	PLL data (upper)								CH87		
0B3	PLL data (lower)										
0B4	PLL data (upper)								CH88		
0B5	PLL data (lower)										
0B6	PLL data (upper)								CH89		
0B7	PLL data (lower)										
0B8	PLL data (upper)								CH90		
0B9	PLL data (lower)										
0BA	PLL data (upper)								CH91		
0BB	PLL data (lower)										
0BC	PLL data (upper)								CH92		
0BD	PLL data (lower)										
0BE	PLL data (upper)								CH93		
0BF	PLL data (lower)										

13-2

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
0C0	PLL data (upper)								CH94		
0C1	PLL data (lower)										
0C2	PLL data (upper)								CH95		
0C3	PLL data (lower)										
0C4	PLL data (upper)								CH96		
0C5	PLL data (lower)										
0C6	PLL data (upper)								CH97		
0C7	PLL data (lower)										
0C8	PLL data (upper)								CH98		
0C9	PLL data (lower)										
0CA	PLL data (upper)								CH99		
0CB	PLL data (lower)										
0CC	POWER	TV/AV									80
0CD	BLUE BACKGROUND				One-digit/two-digit				OFF/ .	Factory-set at ON	55
0CE	LANGUAGE										00
0CF	LAST POSITION										01
0D0	LAST CONTRAST										3F
0D1	LAST COLOUR										1F
0D2	LAST BRIGHTNESS										1F
0D3	LAST TINT										1F
0D4	LAST SHARPNESS										1F
0D5	LAST VOLUME										00
0D6	LAST SERVICE MODE										00
0D7											
0D8											
0D9											
0DA											
0DB											
0DC											
0DD											
0DE											
0DF											
0E0	CH7	CH5	CH5	CH4	CH3	CH2	CH1	CH0	AFT 0 : OFF 1 : ON	AFT OFF	FF
0E1	CH15	CH14	CH13	CH12	CH11	CH10	CH9	CH8			
0E2	CH23	CH22	CH21	CH20	CH19	CH18	CH17	CH16			
0E3	CH31	CH30	CH29	CH28	CH27	CH26	CH25	CH24			
0E4	CH39	CH38	CH37	CH36	CH35	CH34	CH33	CH32			
0E5	CH47	CH46	CH45	CH44	CH43	CH42	CH41	CH40			
0E6	CH55	CH54	CH53	CH52	CH51	CH50	CH49	CH48			
0E7	CH63	CH62	CH61	CH60	CH59	CH58	CH57	CH56			
0E8	CH71	CH70	CH69	CH68	CH67	CH66	CH65	CH64			
0E9	CH79	CH78	CH77	CH76	CH75	CH74	CH73	CH72			
0EA	CH87	CH86	CH85	CH84	CH83	CH82	CH81	CH80			
0EB	CH95	CH94	CH93	CH92	CH91	CH90	CH89	CH88			
0EC					CH99	CH98	CH97	CH96			
0ED											
0EE											
0EF											

14-1

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
0F0	CH7	CH5	CH5	CH4	CH3	CH2	CH1	CH0	SKIP 0 : OFF 1 : ON	SKIP ON	00
0F1	CH15	CH5	CH5	CH4	CH3	CH2	CH1	CH0			
0F2	CH23	CH22	CH21	CH20	CH19	CH18	CH17	CH16			
0F3	CH31	CH30	CH29	CH28	CH27	CH26	CH25	CH24			
0F4	CH39	CH38	CH37	CH36	CH35	CH34	CH33	CH32			
0F5	CH47	CH46	CH45	CH44	CH43	CH42	CH41	CH40			
0F6	CH55	CH54	CH53	CH52	CH51	CH50	CH49	CH48			
0F7	CH63	CH62	CH61	CH60	CH59	CH58	CH57	CH56			
0F8	CH71	CH70	CH69	CH68	CH67	CH66	CH65	CH64			
0F9	CH79	CH78	CH77	CH76	CH75	CH74	CH73	CH72			
0FA	CH87	CH86	CH85	CH84	CH83	CH82	CH81	CH80			
0FB	CH95	CH94	CH93	CH92	CH91	CH90	CH89	CH88			
0FC					CH99	CH98	CH97	CH96			
0FD											
0FE											
0FF											

14-2

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
100	AUDIO SYSTEM				VIDEO SYSTEM				CH0		
101	AUDIO SYSTEM				VIDEO SYSTEM				CH1		
102	AUDIO SYSTEM				VIDEO SYSTEM				CH2		
103	AUDIO SYSTEM				VIDEO SYSTEM				CH3		
104	AUDIO SYSTEM				VIDEO SYSTEM				CH4		
105	AUDIO SYSTEM				VIDEO SYSTEM				CH5		
106	AUDIO SYSTEM				VIDEO SYSTEM				CH6		
107	AUDIO SYSTEM				VIDEO SYSTEM				CH7		
108	AUDIO SYSTEM				VIDEO SYSTEM				CH8		
109	AUDIO SYSTEM				VIDEO SYSTEM				CH9		
10A	AUDIO SYSTEM				VIDEO SYSTEM				CH10		
10B	AUDIO SYSTEM				VIDEO SYSTEM				CH11		
10C	AUDIO SYSTEM				VIDEO SYSTEM				CH12		
10D	AUDIO SYSTEM				VIDEO SYSTEM				CH13		
10E	AUDIO SYSTEM				VIDEO SYSTEM				CH14		
10F	AUDIO SYSTEM				VIDEO SYSTEM				CH15		
110	AUDIO SYSTEM				VIDEO SYSTEM				CH16		
111	AUDIO SYSTEM				VIDEO SYSTEM				CH17		
112	AUDIO SYSTEM				VIDEO SYSTEM				CH18		
113	AUDIO SYSTEM				VIDEO SYSTEM				CH19		
114	AUDIO SYSTEM				VIDEO SYSTEM				CH20		
115	AUDIO SYSTEM				VIDEO SYSTEM				CH21		
116	AUDIO SYSTEM				VIDEO SYSTEM				CH22		
117	AUDIO SYSTEM				VIDEO SYSTEM				CH23		
118	AUDIO SYSTEM				VIDEO SYSTEM				CH24		
119	AUDIO SYSTEM				VIDEO SYSTEM				CH25		
11A	AUDIO SYSTEM				VIDEO SYSTEM				CH26		
11B	AUDIO SYSTEM				VIDEO SYSTEM				CH27		
11C	AUDIO SYSTEM				VIDEO SYSTEM				CH28		
11D	AUDIO SYSTEM				VIDEO SYSTEM				CH29		
11E	AUDIO SYSTEM				VIDEO SYSTEM				CH30		
11F	AUDIO SYSTEM				VIDEO SYSTEM				CH31		
120	AUDIO SYSTEM				VIDEO SYSTEM				CH32		
121	AUDIO SYSTEM				VIDEO SYSTEM				CH33		
122	AUDIO SYSTEM				VIDEO SYSTEM				CH34		
123	AUDIO SYSTEM				VIDEO SYSTEM				CH35		
124	AUDIO SYSTEM				VIDEO SYSTEM				CH36		
125	AUDIO SYSTEM				VIDEO SYSTEM				CH37		
126	AUDIO SYSTEM				VIDEO SYSTEM				CH38		
127	AUDIO SYSTEM				VIDEO SYSTEM				CH39		
128	AUDIO SYSTEM				VIDEO SYSTEM				CH40		
129	AUDIO SYSTEM				VIDEO SYSTEM				CH41		
12A	AUDIO SYSTEM				VIDEO SYSTEM				CH42		
12B	AUDIO SYSTEM				VIDEO SYSTEM				CH43		
12C	AUDIO SYSTEM				VIDEO SYSTEM				CH44		
12D	AUDIO SYSTEM				VIDEO SYSTEM				CH45		
12E	AUDIO SYSTEM				VIDEO SYSTEM				CH46		
12F	AUDIO SYSTEM				VIDEO SYSTEM				CH47		

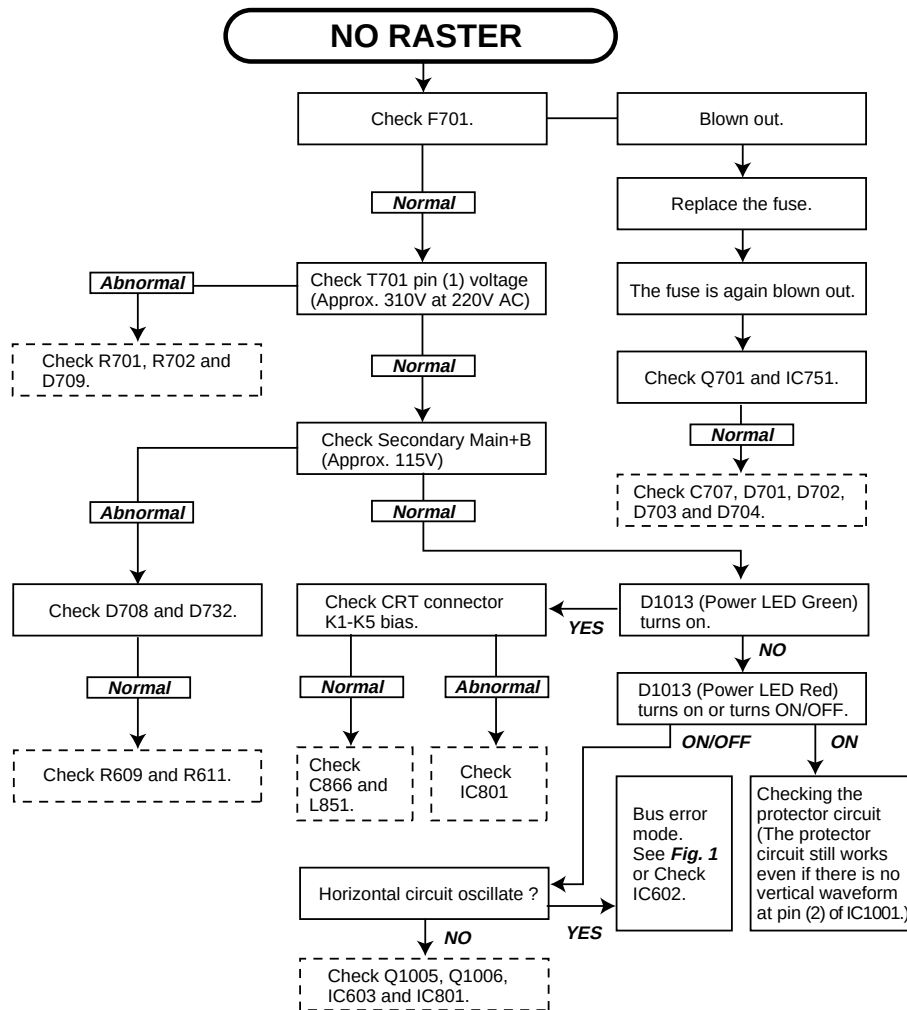
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	7	6	5	4	3	2	1	0			
130	AUDIO SYSTEM				VIDEO SYSTEM				CH48		
131	AUDIO SYSTEM				VIDEO SYSTEM				CH49		
132	AUDIO SYSTEM				VIDEO SYSTEM				CH50		
133	AUDIO SYSTEM				VIDEO SYSTEM				CH51		
134	AUDIO SYSTEM				VIDEO SYSTEM				CH52		
135	AUDIO SYSTEM				VIDEO SYSTEM				CH53		
136	AUDIO SYSTEM				VIDEO SYSTEM				CH54		
137	AUDIO SYSTEM				VIDEO SYSTEM				CH55		
138	AUDIO SYSTEM				VIDEO SYSTEM				CH56		
139	AUDIO SYSTEM				VIDEO SYSTEM				CH57		
13A	AUDIO SYSTEM				VIDEO SYSTEM				CH58		
13B	AUDIO SYSTEM				VIDEO SYSTEM				CH59		
13C	AUDIO SYSTEM				VIDEO SYSTEM				CH60		
13D	AUDIO SYSTEM				VIDEO SYSTEM				CH61		
13E	AUDIO SYSTEM				VIDEO SYSTEM				CH62		
13F	AUDIO SYSTEM				VIDEO SYSTEM				CH63		
140	AUDIO SYSTEM				VIDEO SYSTEM				CH64		
141	AUDIO SYSTEM				VIDEO SYSTEM				CH65		
142	AUDIO SYSTEM				VIDEO SYSTEM				CH66		
143	AUDIO SYSTEM				VIDEO SYSTEM				CH67		
144	AUDIO SYSTEM				VIDEO SYSTEM				CH68		
145	AUDIO SYSTEM				VIDEO SYSTEM				CH69		
146	AUDIO SYSTEM				VIDEO SYSTEM				CH70		
147	AUDIO SYSTEM				VIDEO SYSTEM				CH71		
148	AUDIO SYSTEM				VIDEO SYSTEM				CH72		
149	AUDIO SYSTEM				VIDEO SYSTEM				CH73		
14A	AUDIO SYSTEM				VIDEO SYSTEM				CH74		
14B	AUDIO SYSTEM				VIDEO SYSTEM				CH75		
14C	AUDIO SYSTEM				VIDEO SYSTEM				CH76		
14D	AUDIO SYSTEM				VIDEO SYSTEM				CH77		
14E	AUDIO SYSTEM				VIDEO SYSTEM				CH78		
14F	AUDIO SYSTEM				VIDEO SYSTEM				CH79		
150	AUDIO SYSTEM				VIDEO SYSTEM				CH80		
151	AUDIO SYSTEM				VIDEO SYSTEM				CH81		
152	AUDIO SYSTEM				VIDEO SYSTEM				CH82		
153	AUDIO SYSTEM				VIDEO SYSTEM				CH83		
154	AUDIO SYSTEM				VIDEO SYSTEM				CH84		
155	AUDIO SYSTEM				VIDEO SYSTEM				CH85		
156	AUDIO SYSTEM				VIDEO SYSTEM				CH86		
157	AUDIO SYSTEM				VIDEO SYSTEM				CH87		
158	AUDIO SYSTEM				VIDEO SYSTEM				CH88		
159	AUDIO SYSTEM				VIDEO SYSTEM				CH89		
15A	AUDIO SYSTEM				VIDEO SYSTEM				CH90		
15B	AUDIO SYSTEM				VIDEO SYSTEM				CH91		
15C	AUDIO SYSTEM				VIDEO SYSTEM				CH92		
15D	AUDIO SYSTEM				VIDEO SYSTEM				CH93		
15E	AUDIO SYSTEM				VIDEO SYSTEM				CH94		
15F	AUDIO SYSTEM				VIDEO SYSTEM				CH95		

SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
160	AUDIO SYSTEM				VIDEO SYSTEM				CH96		
161	AUDIO SYSTEM				VIDEO SYSTEM				CH97		
162	AUDIO SYSTEM				VIDEO SYSTEM				CH98		
163	AUDIO SYSTEM				VIDEO SYSTEM				CH99		
164	AUDIO SYSTEM				VIDEO SYSTEM				A/V MODE		
165											
166											
167											
168											
169											
16A											
16B											
16C											
16D											
16E											
16F											
170					CUT OFF (R)				0		00
171					CUT OFF (G)				0		00
172					CUT OFF (B)				0		00
173					DRIVE (G)				127		7F
174					DRIVE (R)				127		7F
175				TV H-CENTER (50Hz)				7		07	
176				TV H-CENTER (60Hz)				12		0C	
177	H BLK PHASE						V-CENTER 50		0,5		05
178	V-AMPLITUDE 50								58		74
179	V S-CORRECTION 50								67	54 (14")	86
17A	V-LINEALITY 50								16		80
17B	Y SUB CONTRAST								18		12
17C	SUB COLOUR								110		6E
17D	SUB BRIGHT								127		7F
17E	SUB TINT								70		46
17F	SUB SHARPNESS								28		1C
180	DELAY PAL (AV)				DELAY PAL (TV)				2,2		22
181	DELAY SECAM (AV)				DELAY SECAM (TV)				4,4		44
182	DELAY NTSC (AV)				DELAY NTSC (TV)				2,2		22
183	DELAY B/W (AV)				DELAY B/W (TV)				2,2		22
184	R-Y BLACK OFFSET				B-Y BLACK OFFSET				10,6		A6
185					Y-MUTE	AV2			OFF/ON		04
186					V-CENTER 60				2		02
187	V-AMPLITUDE 60								59	57 (14")	76
188	V S-CORRECTION 60								74		E8
189	V-LINEARITY 60								14		70
18A			WIDE V-BLK START PHASE 50					58		3A	
18B			WIDE V-BLK START PHASE 60					60		3C	
18C		WIDE V-BLK STOP PHASE 50					25		19		
18D		WIDE V-BLK STOP PHASE 60					20		14		
18E	SUB CONTRAST							255			FF
18F											

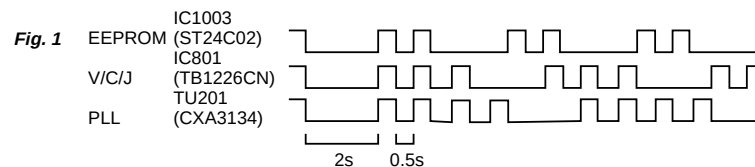
SUB ADDRESS	DATA								REMARKS	CRITERIA	FACTORY SETTING
	7	6	5	4	3	2	1	0			
190	P/N KIL	NOISE DET							0		00
191	RGB CONTRAST								255		FF
192	Y γ	WPL SW							0,0		00
193						AFC MODE			1		02
194	B.S OFF				P/N GP	CL-L SW			0,0,1		00
195	CLL LEVEL		PN CD ATT						2,2		A0
196	BLACK STRETCH OFFSET			DC TRAN RATE			APA-CON F0		7,2,2		EA
197	ABL POINT			ABL GAIN					0,1		04
198						COINCIDENT			0		01*
199	NOISE DET LEVEL								0		00
19A	N COMB								1		80
19B	S-FIELD	SCD ATT	DEMP F0	S GP	V-ID SW	S KIL	BELL F0				21
19C											
19D											
19E											
19F											
1A0	TOF Q (AV)		TOF F0 (AV)		TOF Q (TV)		TOF F0 (TV)		PAL		8B
1A1	TOF Q (AV)		TOF F0 (AV)		TOF Q (TV)		TOF F0 (TV)		SECAM		8B
1A2	TOF Q (AV)		TOF F0 (AV)		TOF Q (TV)		TOF F0 (TV)		N443		8B
1A3	TOF Q (AV)		TOF F0 (AV)		TOF Q (TV)		TOF F0 (TV)		N358		8B
1A4	C-TRAP Q (AV)		C-TRAP F0 (AV)		C-TRAP Q (TV)		C-TRAP F0 (TV)		PAL		66
1A5	C-TRAP Q (AV)		C-TRAP F0 (AV)		C-TRAP Q (TV)		C-TRAP F0 (TV)		SECAM		66
1A6	C-TRAP Q (AV)		C-TRAP F0 (AV)		C-TRAP Q (TV)		C-TRAP F0 (TV)		N443		66
1A7	C-TRAP Q (AV)		C-TRAP F0 (AV)		C-TRAP Q (TV)		C-TRAP F0 (TV)		N358		66
1A8	N358 SHARPNESS								10		0A
1A9	N358 TR								ON		00
1AA											
1AB											
1AC											
1AD											
1AE											
1AF											
1B0											
1B1											
1B2											
1B3											
1B4											
1B5											
1B6											
1B7											
1B8											
1B9											
1BA											
1BB											
1BC											
1BD											
1BE											
1BF											

* : The initial setting of the RH-IX2938CEZZ/N1 must be changed from 00 to 01. With the RH-IX2938CEN2, there is no need to change the initial setting.

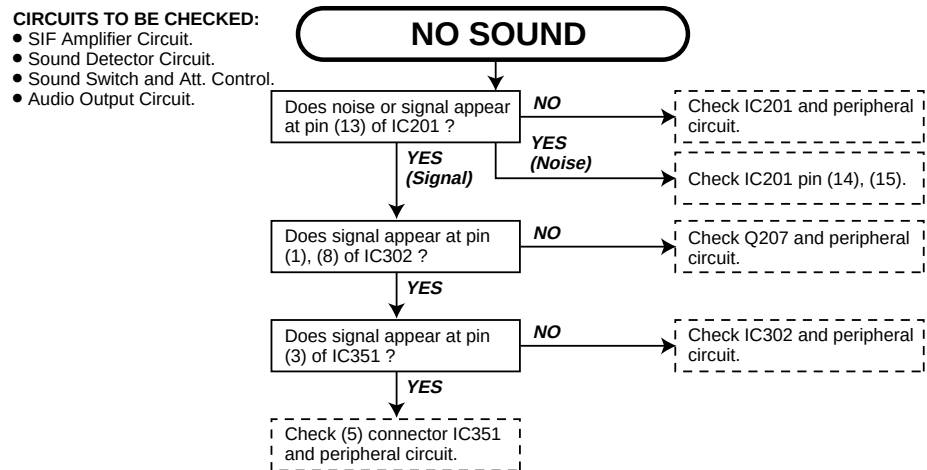
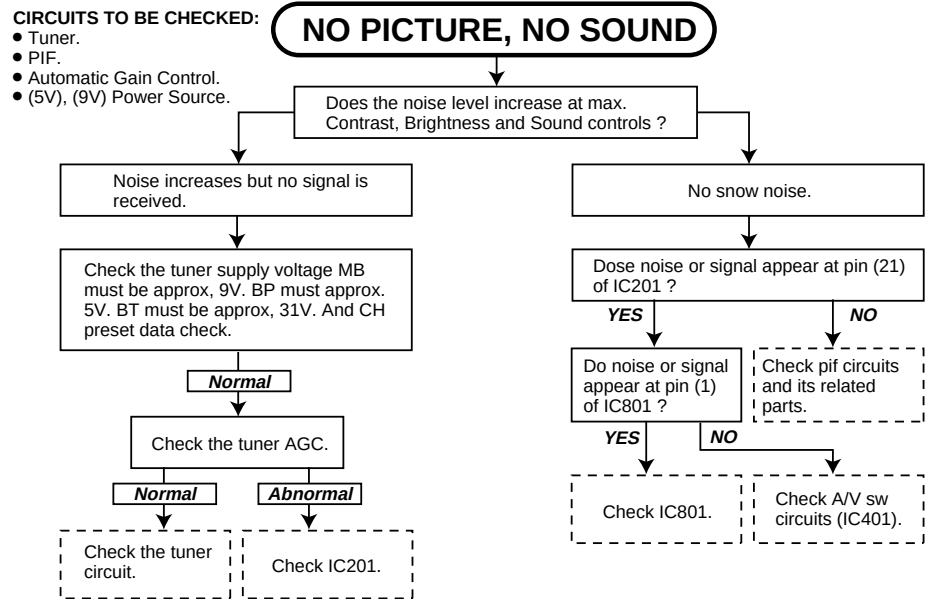
17



If a bus error happens, the LED RED (pin 3) indicator starts flashing and the power is turned off. The power key is still effective.



TROUBLE SHOOTING TABLE (Continued)



TROUBLE SHOOTING TABLE (Continued)

NEITHER VERTICAL NOR HORIZONTAL SYNCHRONIZATION

CIRCUIT TO BE CHECKED:

- Sync. Separator Circuit.

Check IC801 and Q401.

DEFECTIVE VERTICAL AMP. AND VERTICAL LINEARITY

Readjust vertical size.
(Bas Data)

Vertical size is abnormal.

Check R510, C513, C514
and C501.

Vertical linearity is abnormal.

Check C515, C519, R511,
R513 and R514.

NO VERTICAL SCAN

Check IC501 bias.

Normal

Check C506.

Abnormal

Check IC501.

18-1

TROUBLE SHOOTING TABLE (Continued)

NO SPECIFIC COLOUR

NO

Is some colour produced in
B/W broadcast reception ?

YES

Check IC801, R809, R810,
R811, D801, D802, D803,
Q801, Q802, Q803, Q804
and Q805.

YES

Is the white balance properly
adjusted ?

NO

Readjust the white balance.

The picture colour is cyan.

Check Q851 and its
adjacent circuits.

The picture colour is magenta.

Check Q852 and its
adjacent circuits.

The picture colour is yellow.

Check Q853 and its
adjacent circuits.NO SPECIFIC COLOUR
"PAL"/"NTSC"/"SECAM"
(NO COLOUR SYNCHRONISATION)

"PAL"/"NTSC"

Check IC801 and bias
control circuit.

"SECAM"

Normal

Check X801, C810, C815,
C816 and R814.

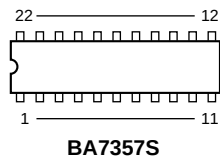
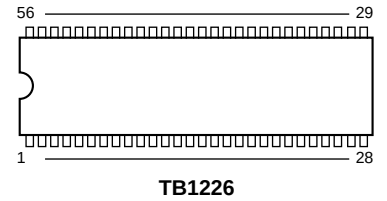
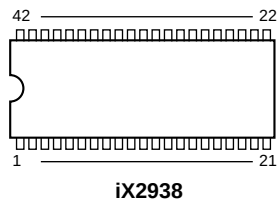
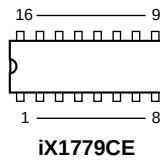
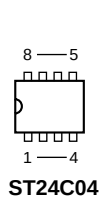
Normal

Check C901, (31)pin of
IC1001.

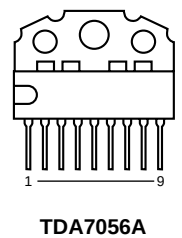
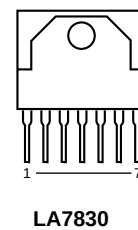
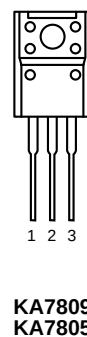
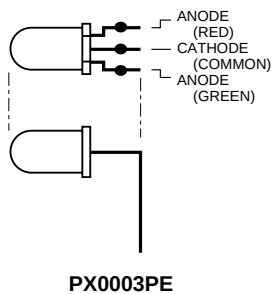
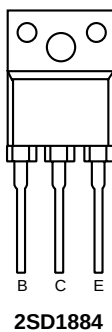
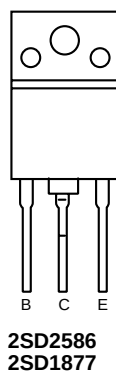
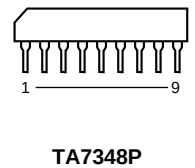
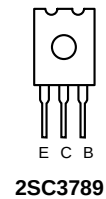
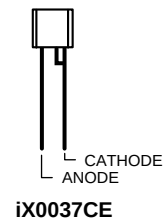
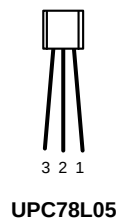
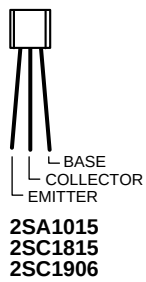
18-2

SOLID STATE DEVICE DIAGRAM

TOP VIEW

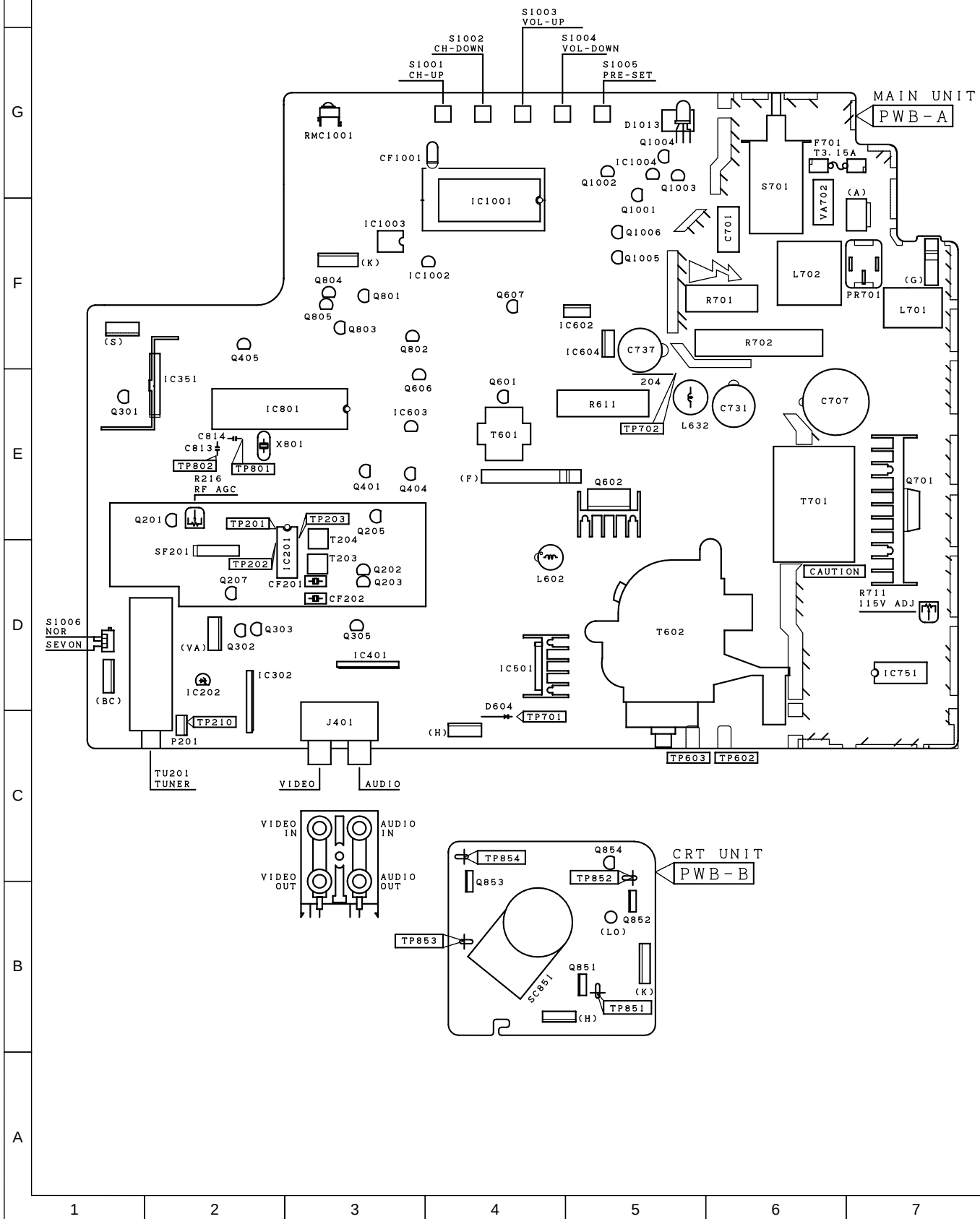


SIDE VIEW

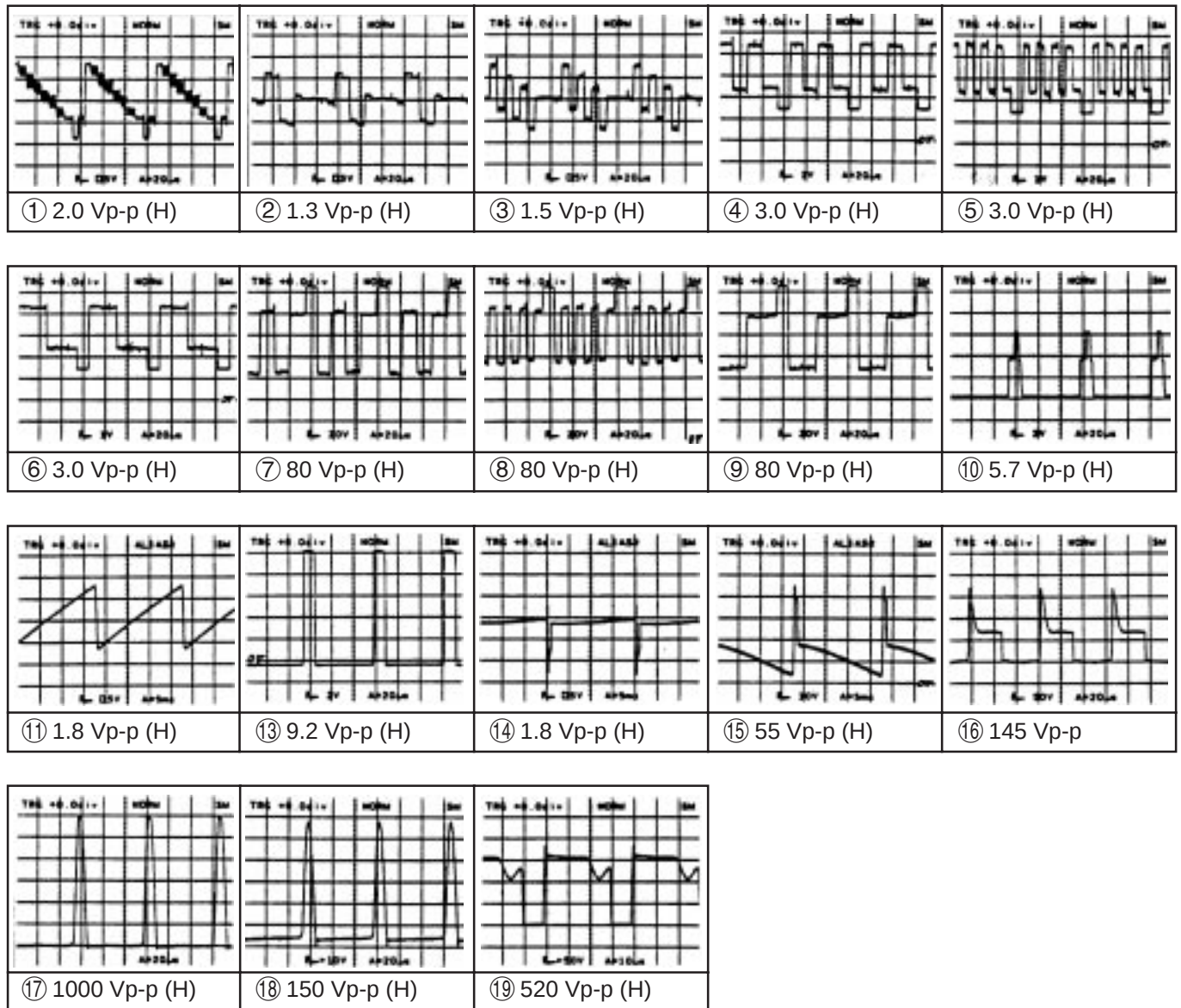


CHASSIS LAYOUT

MODEL 21SLX



WAVEFORMS



DESCRIPTION OF SCHEMATIC DIAGRAM

SAFETY NOTES:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

IMPORTANT SAFETY NOTICE:

PARTS MARKED WITH "⚠" () ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET. BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFORMANCE OF THE SET.

SERVICE PRECAUTION:

THE AREA ENCLOSED BY THIS LINE (— — —) IS DIRECTLY
CONNECTED WITH AC MAINS VOLTAGE.
WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANS-
FORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE
HAZARD OF ELECTRIC SHOCK.

NOTES:

1. The unit of resistance "ohm" is omitted.
(K = 1000 ohms, M = Meg ohm).
2. All resistors are 1/8 watt, unless otherwise noted.
3. All capacitors are μF , unless otherwise noted. ($P = \mu\mu\text{F}$).

VOLTAGE MEASUREMENT CONDITIONS:

1. Voltage in parenthesis measured with no Signal.
2. Voltages without parenthesis measured with 3mV B & W or Colour-Signal.
3. All the voltages in each point are measured with VTVM.

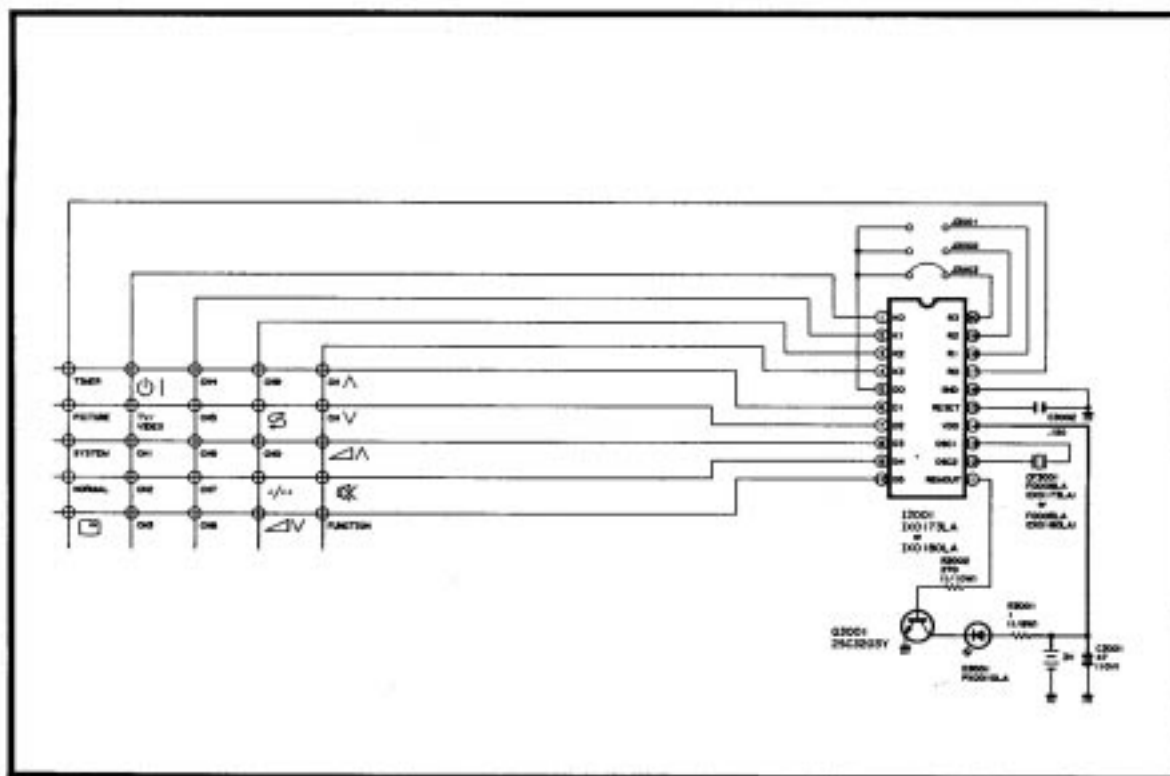
WAVEFORM MEASUREMENT CONDITIONS:

1. Colour bar generator signal of 1.5V peak to peak applied at Base of Video Buffer Amp. Q202.
2. Approximately 4.0 V AGC bias.

Infrared Remote Control Unit

NOTE: The parts here shown are supplied as an assembly but not independently.

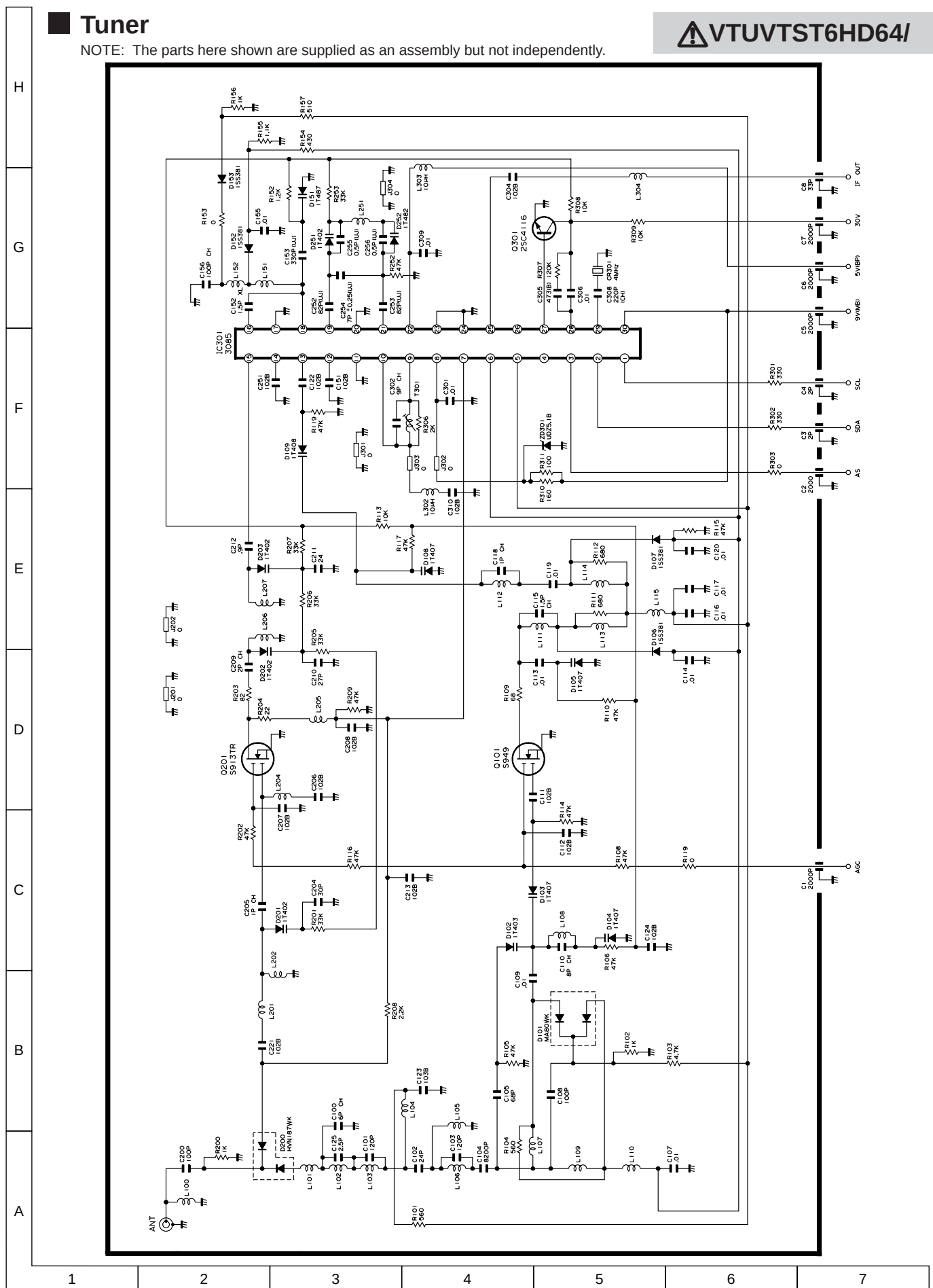
RRMCG1342PESA



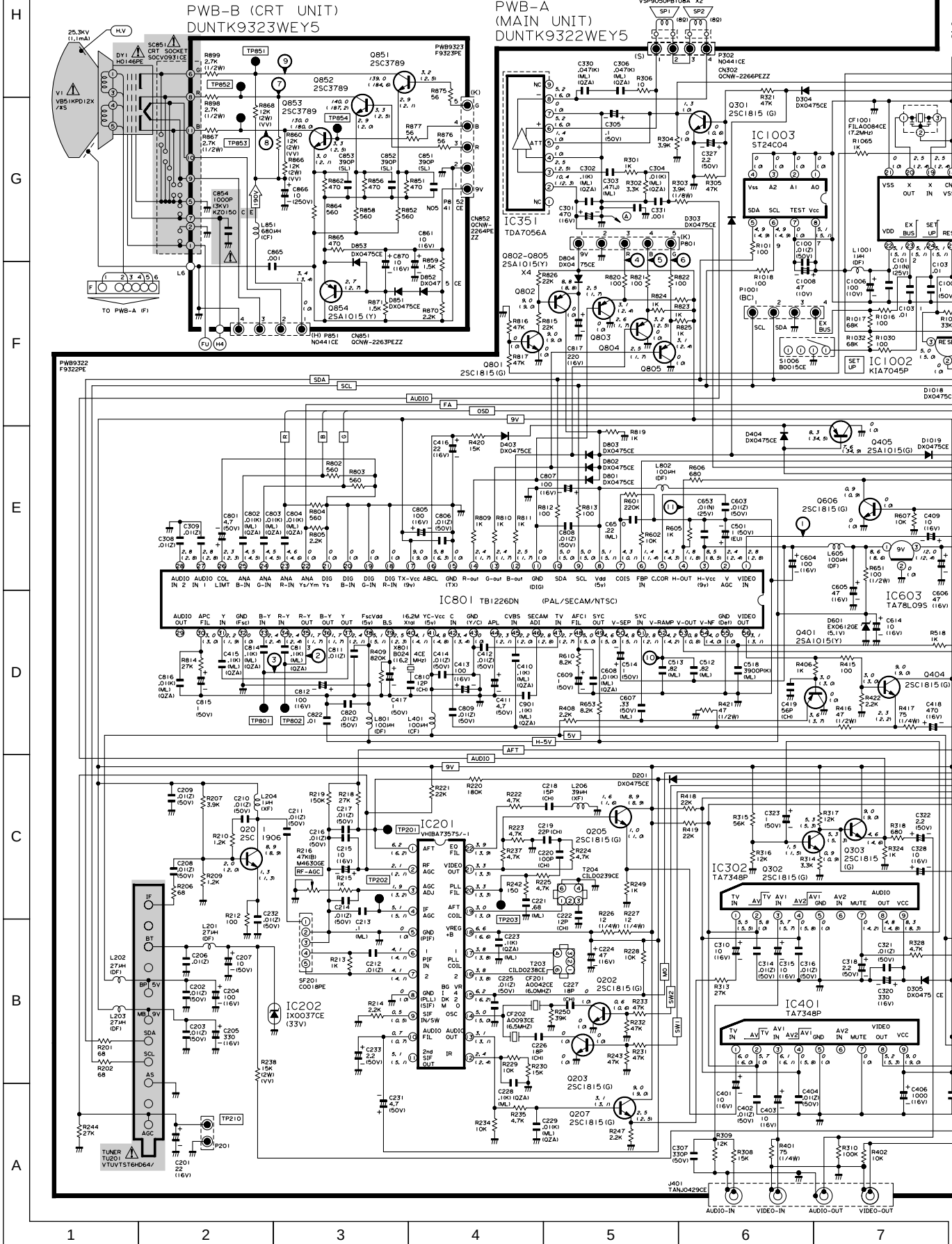
■ **Tuner**

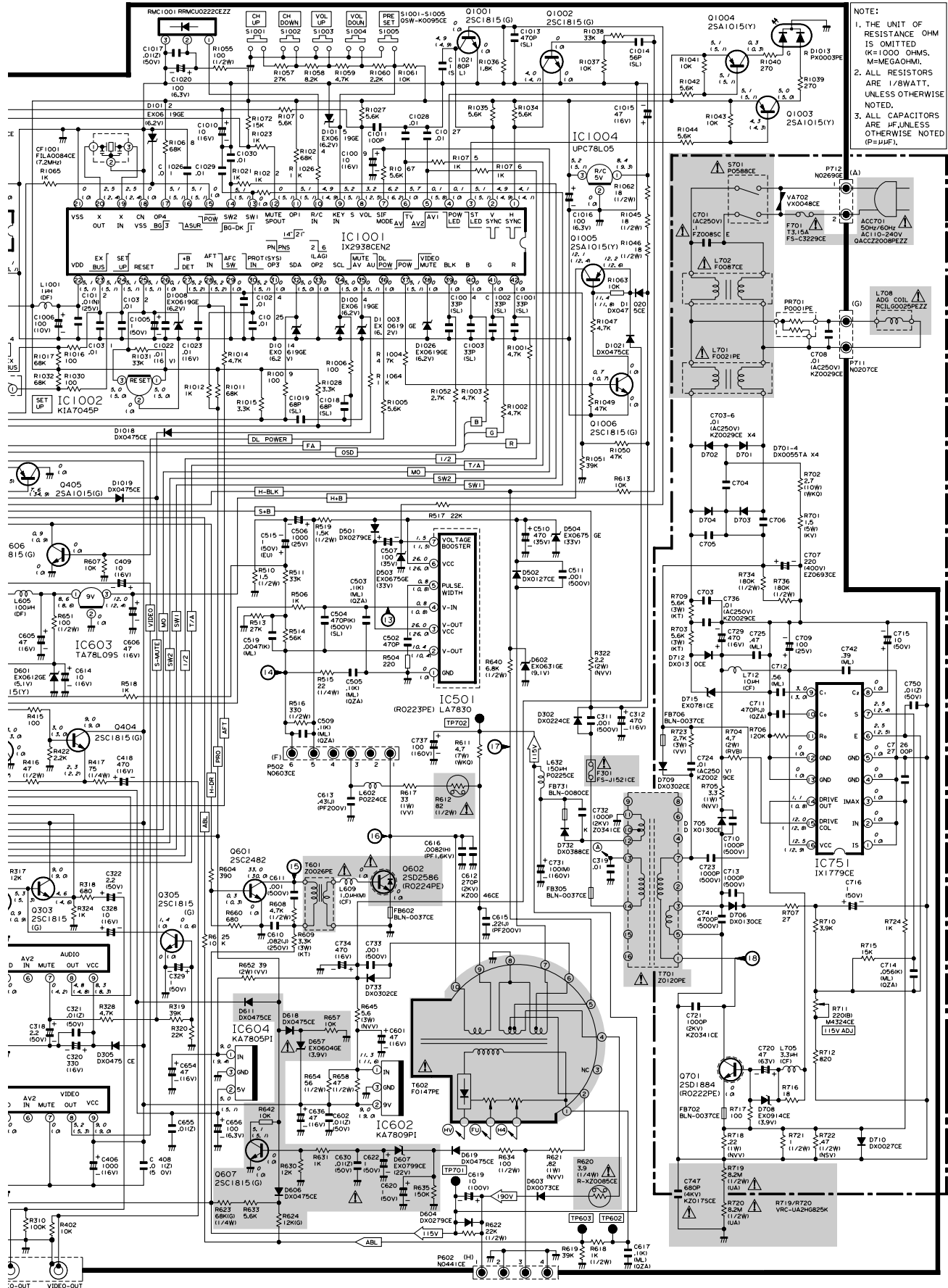
NOTE: The parts here shown are supplied as an assembly but not independently.

⚠ VTUVTST6HD64/



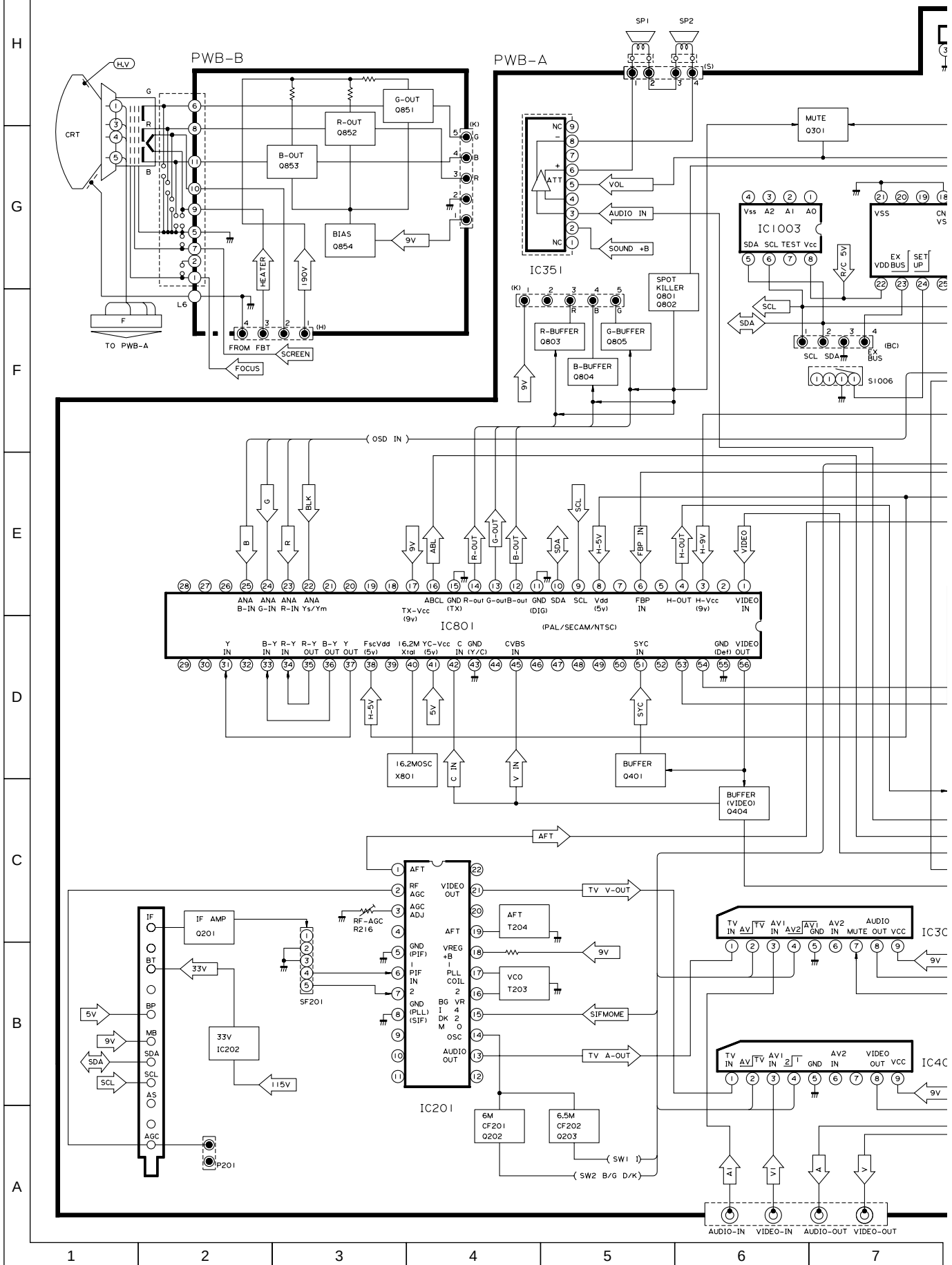
SCHEMATIC DIAGRAM

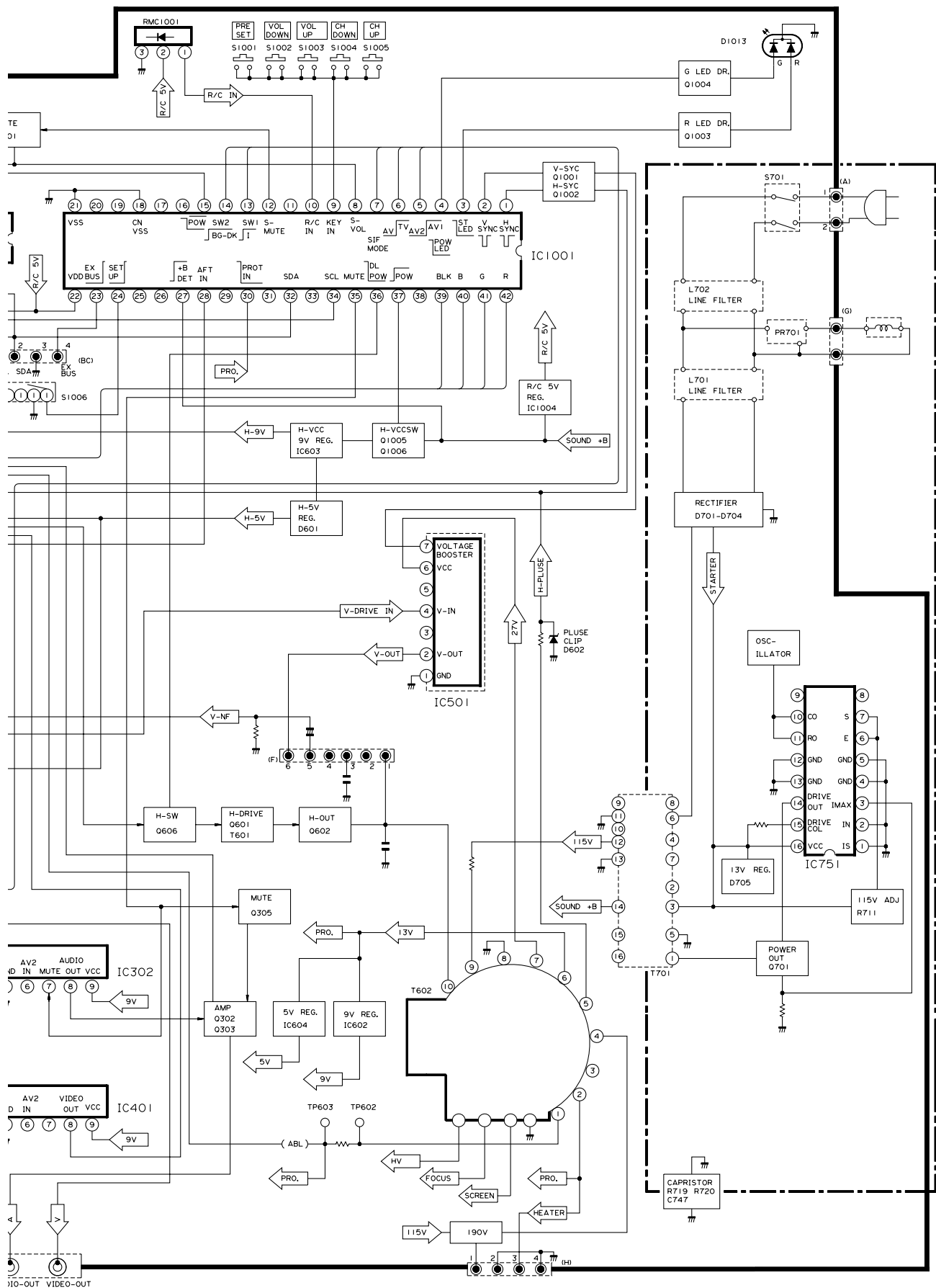




7	8	9	10	11	12	13
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BLOCK DIAGRAM

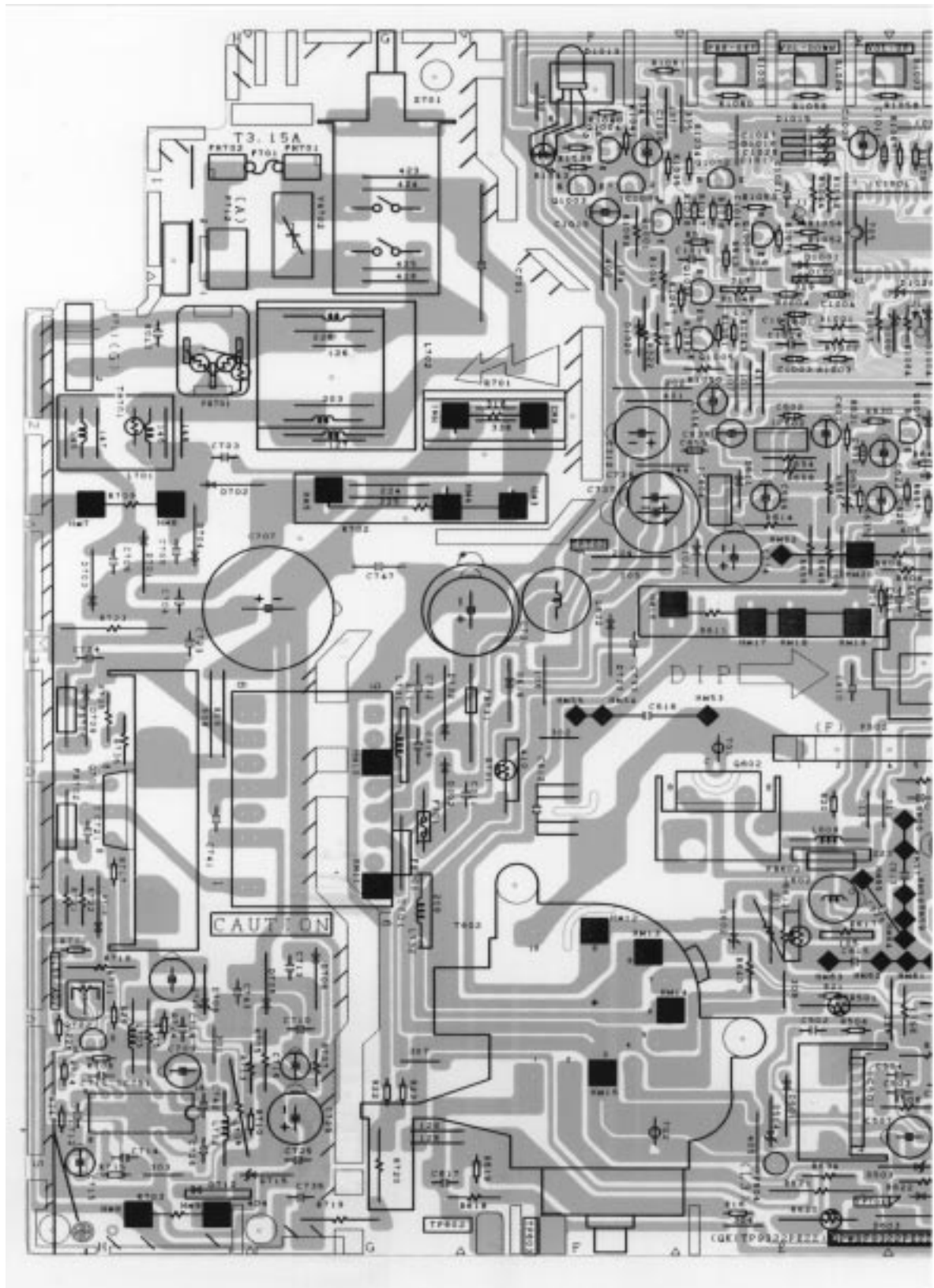


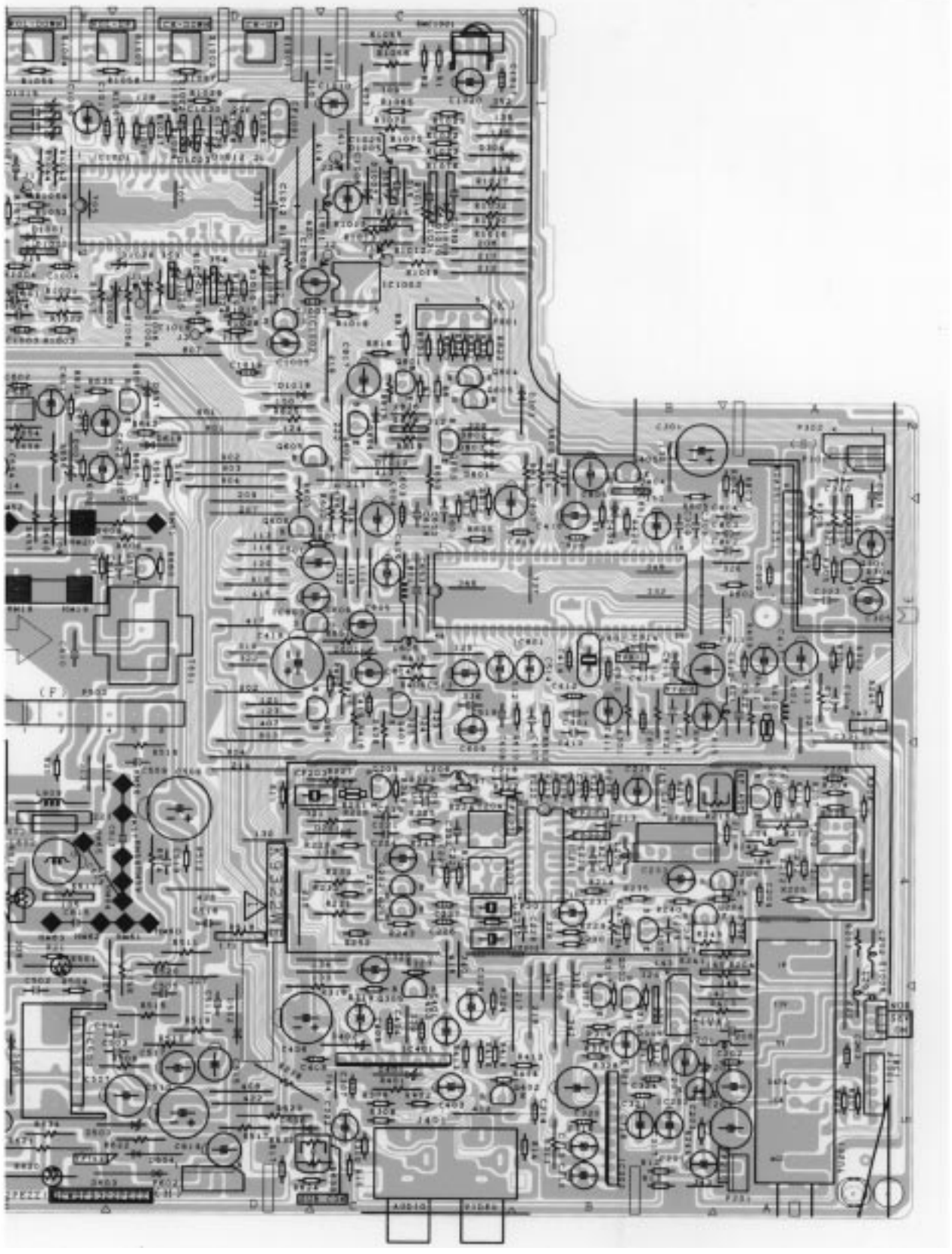


7	8	9	10	11	12	13
---	---	---	----	----	----	----

PRINTED WIRING BOARD ASSEMBLIES

PWB-A: MAIN Unit (Wiring Side)





7	8	9	10	11	12	13
---	---	---	----	----	----	----

PWB-B: CRT SOCKET Unit (Wiring Side)

H

G

F

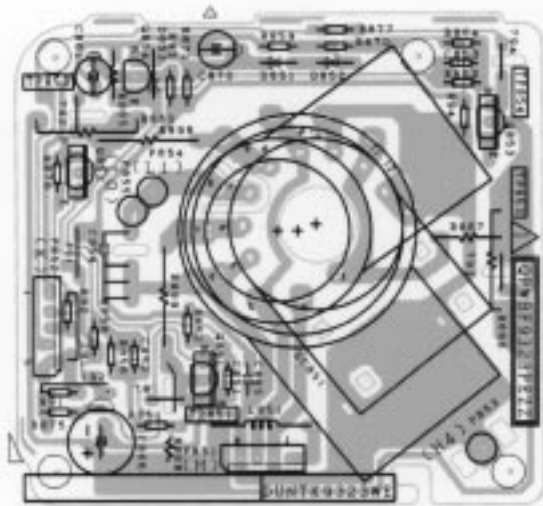
E

D

C

B

A



1

2

3

4

5

6

7

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual: electrical components having such features are identified by "△" in the Replacement Parts Lists.

The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

- | | |
|-----------------|----------------|
| 1. MODEL NUMBER | 2. REF. NO. |
| 3. PART NO. | 4. DESCRIPTION |

MARK ★: SPARE PARTS-DELIVERY SECTION

Ref. No.	Part No.	★	Description	Code
----------	----------	---	-------------	------

PICTURE TUBE

△ V1	VB51KPD12X/*S	R	Picture Tube	CF
△ DY1	RCiLH0146PEZZ	R	Deflection Yoke	BF
△ L708	RCiLG0025PEZZ	R	Degaussing Coil	AW
	LHLDW0003PEKZ	R	ADG Coil Holder	AB
	MSPRT0001PEFJ	R	CRT Spring	AC
	PMAGF3003CEZZ	R	Purity Magnet	AK
	LHLDW1075PEKZ	R	ADG/L1 Fix	AC
	PSPAG0003PEZZ	R	Wedge(Gum),x3	AD

PRINTED WIRING BOARD ASSEMBLIES (NOT REPLECEMENT ITEM)

PWB-A	DUNTK9322WEY5	—	Main Unit	—
PWB-B	DUNTK9323WEY5	—	CRT Socket Unit	—

Ref. No.	Part No.	★	Description	Code
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PWB-A DUNTK9322WEY5 MAIN UNIT

TUNER

NOTE: THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.

△ TU201	VTUVTST6HD64/	R	Tuner	BF
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INTEGRATED CIRCUITS

IC201	VHIBA7357S/-1	R	BA7357S	AR
IC202	RH-IX0037CEZZ	R	UPC574J	AF
IC302	VHITA7348P/-1	R	TA7348P	AK
IC351	VHITDA7056A-1	R	TDA7056A	AP
IC401	VHITA7348P/-1	R	TA7348P	AK
IC501	VHILA7830//-1	R	LA7830	AH
IC602	VHIKA7809PI-1	R	KIA7809PI	AE
IC603	VHITA78L09S-1	R	TA78L09S	AC
IC604	VHIKA7805PI-1	R	KIA7805PI	AE
IC751	RH-IX1779CEZZ	R	TEA2261	AR
IC801	VHITB1226DN-1	R	TB1226DN	BB
IC1001	RH-IX2938CEN2	R	M37221M4-109SP	AW
IC1002	VHIKIA7045P-1	R	KIA7045P	AD
IC1003	VHIST24C04/-1	R	ST24C04CB6	AQ
IC1004	VHIUPC78L05-4	R	UPC78L05J	AD

TRANSISTORS

Q201	VS2SC1906//1E	R	2SC1906	AC
Q202	VS2SC1815GW-1	R	2SC1815GW	AB
Q203	VS2SC1815GW-1	R	2SC1815GW	AB
Q205	VS2SC1815GW-1	R	2SC1815GW	AB
Q207	VS2SC1815GW-1	R	2SC1815GW	AB
Q301	VS2SC1815GW-1	R	2SC1815GW	AB
Q302	VS2SC1815GW-1	R	2SC1815GW	AB
Q303	VS2SC1815GW-1	R	2SC1815GW	AB
Q305	VS2SC1815GW-1	R	2SC1815GW	AB
Q401	VS2SA1015Y/1E	R	2SA1015Y	AC
Q404	VS2SC1815GW-1	R	2SC1815GW	AB
Q405	VS2SA1015G/1E	R	2SA1015G	AC
Q601	VS2SC2482//-1	R	2SC2482	AD
△ Q602	VS2SD2586//1E	R	2SD2586	AM
Q606	VS2SC1815GW-1	R	2SC1815GW	AB
△ Q607	VS2SC1815GW-1	R	2SC1815GW	AB
Q701	VS2SD1884//-1	R	2SD1884	AN
Q801	VS2SC1815GW-1	R	2SC1815GW	AB
Q802	VS2SA1015Y/1E	R	2SA1015Y	AC
Q803	VS2SA1015Y/1E	R	2SA1015Y	AC
Q804	VS2SA1015Y/1E	R	2SA1015Y	AC
Q805	VS2SA1015Y/1E	R	2SA1015Y	AC
Q1001	VS2SC1815GW-1	R	2SC1815GW	AB
Q1002	VS2SC1815GW-1	R	2SC1815GW	AB
Q1003	VS2SA1015Y/1E	R	2SA1015Y	AC
Q1004	VS2SA1015Y/1E	R	2SA1015Y	AC
Q1005	VS2SA1015Y/1E	R	2SA1015Y	AC
Q1006	VS2SC1815GW-1	R	2SC1815GW	AB

DIODES AND LED'S

D201	RH-DX0475CEZZ	R	Diode	AB
D302	RH-DX0224CEZZ	R	Diode	AB
D303	RH-DX0475CEZZ	R	Diode	AB
D304	RH-DX0475CEZZ	R	Diode	AB
D305	RH-DX0475CEZZ	R	Diode	AB
D403	RH-DX0475CEZZ	R	Diode	AB
D404	RH-DX0475CEZZ	R	Diode	AB
D501	RH-DX0279CEZZ	R	Diode	AB
D502	RH-DX0127CEZZ	R	Diode	AC
D503	RH-EX0675GEZZ	R	Zener Diode	AB
D504	RH-EX0675GEZZ	R	Zener Diode	AB

Ref. No.	Part No.	★	Description	Code
PWB-A DUNTK9322WEY5				
MAIN UNIT (Continued)				
D601	RH-EX0612GEZZ	R	Zener Diode	AA
D602	RH-EX0631GEZZ	R	Zener Diode	AA
D603	RH-DX0073CEZZ	R	Diode	AD
D604	RH-DX0279CEZZ	R	Diode	AB
△ D606	RH-DX0475CEZZ	R	Diode	AB
△ D607	RH-EX0799CEZZ	R	Zener Diode	AB
△ D611	RH-DX0475CEZZ	R	Diode	AB
△ D618	RH-DX0475CEZZ	R	Diode	AB
D619	RH-DX0475CEZZ	R	Diode	AB
△ D657	RH-EX0604GEZZ	R	Zener Diode	AB
D701	RH-DX0055TAZZ	R	Diode	AD
D702	RH-DX0055TAZZ	R	Diode	AD
D703	RH-DX0055TAZZ	R	Diode	AD
D704	RH-DX0055TAZZ	R	Diode	AD
D705	RH-DX0130CEZZ	R	Diode	AE
D706	RH-DX0130CEZZ	R	Diode	AE
D708	RH-EX0914CEZZ	R	Zener Diode	AD
D709	RH-DX0302CEZZ	R	Diode	AC
D710	RH-DX0027CEZZ	R	Diode	AE
D712	RH-DX0130CEZZ	R	Diode	AE
D715	RH-EX0781CEZZ	R	Zener Diode	AB
D732	RH-DX0388CEZZ	R	Diode	AE
D733	RH-DX0302CEZZ	R	Diode	AC
D801	RH-DX0475CEZZ	R	Diode	AB
D802	RH-DX0475CEZZ	R	Diode	AB
D803	RH-DX0475CEZZ	R	Diode	AB
D804	RH-DX0475CEZZ	R	Diode	AB
D1003	RH-EX0619GEZZ	R	Zener Diode	AA
D1004	RH-EX0619GEZZ	R	Zener Diode	AA
D1008	RH-EX0619GEZZ	R	Zener Diode	AA
D1012	RH-EX0619GEZZ	R	Zener Diode	AA
D1013	RH-PX0003PEZZ	R	PHOTODiode	AF
D1014	RH-EX0619GEZZ	R	Zener Diode	AA
D1015	RH-EX0619GEZZ	R	Zener Diode	AA
D1018	RH-DX0475CEZZ	R	Diode	AB
D1019	RH-DX0475CEZZ	R	Diode	AB
D1020	RH-DX0475CEZZ	R	Diode	AB
D1021	RH-DX0475CEZZ	R	Diode	AB
D1026	RH-EX0619GEZZ	R	Zener Diode	AA
VA702	RH-VX0048CEZZ	R	Varistor	AE
PACKAGED CIRCUITS				
PR701	RMPTP0001PEZZ	R	Packaged Circuit	AN
X801	RCRSB0244CEZZ	R	Crystal	AH
FILTER				
CF201	RFILA0042CEZZ	R	Filter	AD
CF202	RFILA0093CEZZ	R	Filter	AC
CF1001	RFILA0084CEZZ	R	Filter	AE
SF201	RFILC0018PEZZ	R	Filter	AL
COILS				
L201	VP-DF270K0000	R	Peaking 27μH	AB
L202	VP-DF270K0000	R	Peaking 27μH	AB
L203	VP-DF270K0000	R	Peaking 27μH	AB
L204	VP-XF1R0K0000	R	Peaking 1μH	AB
L206	VP-XF390K0000	R	Peaking 39μH	AB
L401	VP-CF101K0000	R	Peaking 100μH	AB
L602	RCILP0224CEZZ	R	Coil	AE
L605	VP-DF101K0000	R	Peaking 100μH	AB
L609	VP-CF1R0M0000	R	Peaking 1μH	AB
L632	RCILP0225CEZZ	R	Coil	AF
△ L701	RCILF0021PEZZ	R	Coil	AK
L702	RCILF0087CEZZ	R	Coil	AL
L705	VP-CF3R3K0000	R	Peaking 3.3μH	AB

Ref. No.	Part No.	★	Description	Code
L712	VP-CF100K0000	R	Peaking 10μH	AB
L801	VP-DF101K0000	R	Peaking 100μH	AB
L802	VP-DF101K0000	R	Peaking 100μH	AB
L1001	VP-DF1R0K0000	R	Peaking 1μH	AB
TRANSFORMERS				
T203	RCILD0238CEZZ	R	Detection Coil	AE
T204	RCILD0239CEZZ	R	Detection Coil	AE
△ T601	RTRNZ0026PEZZ	R	Transformer	AH
△ T602	RTRNF0147PEZZ	R	H-VOLT Transformer	BC
△ T701	RTRNZ0120PEZZ	R	Transformer	AX
CONTROLS				
R216	RVR-M4630GEZZ	R	Variable Resistor	AB
R711	RVR-M4324CEZZ	R	Variable Resistor	AC
CAPACITORS				
C201	VCEAGA1CW226M	R	22 16V Electrolytic	AB
C202	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C203	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C204	VCEAGA1CW107M	R	100 16V Electrolytic	AB
C205	VCEAGA1CW337M	R	330 16V Electrolytic	AC
C206	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C207	VCEAGA1HW106M	R	10 50V Electrolytic	AC
C208	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C209	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C210	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C211	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C212	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C213	VCFYSA1HB104J	R	0.1 50V M.Polypro	AB
C214	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C215	VCEAGA1CW106M	R	10 16V Electrolytic	AA
C216	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C217	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C218	VCCCPA1HH150J	R	15p 50V Ceramic	AA
C219	VCCCPA1HH220J	R	22p 50V Ceramic	AA
C220	VCCCPA1HH101J	R	100p 50V Ceramic	AA
C221	VCFYSA1HB684J	R	0.68 50V M.Polypro	AC
C222	VCCCPA1HH120J	R	12p 50V Ceramic	AA
C223	RC-QZA104TAYK	R	0.1 50V Mylar	AB
C224	VCEAGA1CW476M	R	47 16V Electrolytic	AB
C225	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C226	VCCCPA1HH180J	R	18p 50V Ceramic	AA
C227	VCCCPA1HH180J	R	18p 50V Ceramic	AA
C228	RC-QZA104TAYK	R	0.1 50V Mylar	AB
C229	RC-QZA103TAYK	R	0.01 50V Mylar	AA
C231	VCEAGA1HW475M	R	4.7 50V Electrolytic	AB
C232	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C233	VCEAGA1HW225M	R	2.2 50V Electrolytic	AB
C301	VCEAGA1CW477M	R	470 16V Electrolytic	AC
C302	RC-QZA104TAYK	R	0.1 50V Mylar	AB
C303	VCFYSA1HB474J	R	0.47 50V M.Polypro	AC
C304	RC-QZA103TAYK	R	0.01 50V Mylar	AA
C305	VCEAGA1HW104M	R	0.1 50V Electrolytic	AA
C306	RC-QZA473TAYK	R	0.047 50V Mylar	AB
C307	VCKYPA1HB331K	R	330p 50V Ceramic	AA
C308	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C309	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C310	VCEAGA1CW106M	R	10 16V Electrolytic	AA
C311	VCKYPA2HB102K	R	1000p 500V Ceramic	AA
C312	VCEAGA1CW477M	R	470 16V Electrolytic	AC
C314	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C315	VCEAGA1CW106M	R	10 16V Electrolytic	AA
C316	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C318	VCEAGA1HW225M	R	2.2 50V Electrolytic	AB
C319	VCKYD41CY103N	R	0.01 16V Ceramic	AA
C320	VCEAGA1CW337M	R	330 16V Electrolytic	AC
C321	VCKYPA1HF103Z	R	0.01 50V Ceramic	AA
C322	VCEAGA1HW225M	R	2.2 50V Electrolytic	AB

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A DUNTK9322WEY5									
MAIN UNIT (Continued)									
C323	VCEAGA1HW105M	R 1	50V Electrolytic	AC	C656	VCEAGA0JW107M	R 100	6.3V Electrolytic	AB
C327	VCEAGA1HW225M	R 2.2	50V Electrolytic	AB	△ C701	RC-FZ008SCEZZ	R 1000p	AC250V M.Polypro	AE
C328	VCEAGA1CW106M	R 10	16V Electrolytic	AA	C703	RC-KZ0029CEZZ	R 0.01	AC250V Ceramic	AC
C329	VCEAGA1HW105M	R 1	50V Electrolytic	AC	C704	RC-KZ0029CEZZ	R 0.01	AC250V Ceramic	AC
C330	RC-QZA473TAYK	R 0.47	50V Mylar	AB	C705	RC-KZ0029CEZZ	R 0.01	AC250V Ceramic	AC
C331	VCKYD41HB102K	R 1000p	50V Ceramic	AA	C706	RC-KZ0029CEZZ	R 0.01	AC250V Ceramic	AC
C401	VCEAGA1CW106M	R 10	16V Electrolytic	AA	C707	RC-EZ0693CEZZ	R 220	400V Electrolytic	AS
C402	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C708	RC-KZ0029CEZZ	R 0.01	AC250V Ceramic	AC
C403	VCEAGA1CW106M	R 10	16V Electrolytic	AA	C709	VCEAGA1EW107M	R 100	25V Electrolytic	AD
C404	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C710	VCKYPA2HB102K	R 1000p	500V Ceramic	AA
C406	VCEAGA1CW108M	R 1000	16V Electrolytic	AD	C711	RC-QZA471TAYJ	R 470	50V Mylar	AB
C408	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C712	VCFYSA1HB564J	R 0.56	50V M.Polypro	AC
C409	VCEAGA1CW106M	R 10	16V Electrolytic	AA	C713	VCKYPA2HB102K	R 1000p	500V Ceramic	AA
C410	RC-QZA104TAYK	R 0.1	50V Mylar	AB	C714	RC-QZA563TAYK	R 0.056	50V Mylar	AB
C411	VCEAGA1HW475M	R 4.7	50V Electrolytic	AB	C715	VCEAGA1HW106M	R 10	50V Electrolytic	AC
C412	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C716	VCEAGA1HW105M	R 1	50V Electrolytic	AC
C413	VCEAGA1CW107M	R 100	16V Electrolytic	AB	C720	VCEAGA1JW476M	R 47	63V Electrolytic	AB
C414	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C721	RC-KZ0341CEZZ	R 1000p	2kV Ceramic	AD
C415	RC-QZA104TAYK	R 0.1	50V Mylar	AB	C723	VCKYPA2HB102K	R 1000p	500V Ceramic	AA
C416	VCEAGA1CW226M	R 22	16V Electrolytic	AB	C724	RC-KZ0029CEZZ	R 0.01	AC250V Ceramic	AC
C417	VCEAGA1HW105M	R 1	50V Electrolytic	AC	C725	VCFYSA1HB474J	R 0.47	50V M.Polypro	AC
C418	VCEAGA1CW477M	R 470	16V Electrolytic	AC	C726	VCKYPA1HB272K	R 2700p	50V Ceramic	AA
C419	VCCCPA1HH560J	R 56p	50V Ceramic	AA	C729	VCEAGA1CW477M	R 470	16V Electrolytic	AC
C501	VCEACA1HC105M	R 1	50V Electrolytic	AC	C731	VCEAGH2CW107M	R 100	160V Electrolytic	AE
C502	VCKYPA1HB471K	R 470p	50V Ceramic	AA	C732	RC-KZ0341CEZZ	R 1000p	2kV Ceramic	AD
C503	RC-QZA104TAYK	R 0.1	50V Mylar	AB	C733	VCKYPA2HB102K	R 1000p	500V Ceramic	AA
C504	VCCSPA2HL471K	R 470p	500V Ceramic	AB	C734	VCEAGA1CW477M	R 470	16V Electrolytic	AC
C505	RC-QZA104TAYK	R 0.1	50V Mylar	AB	C736	RC-KZ0029CEZZ	R 0.01	AC250V Ceramic	AC
C506	VCEAGA1EW108M	R 1000	25V Electrolytic	AD	C737	VCEAGH2CW107M	R 100	160V Electrolytic	AE
C507	VCEAGA1VW107M	R 100	35V Electrolytic	AC	C741	VCKYPA2HB472K	R 4700p	500V Ceramic	AB
C509	RC-QZA104TAYK	R 0.1	50V Mylar	AB	C742	VCFYSA1HB394J	R 0.39	50V M.Polypro	AC
C510	VCEAGA1VW477M	R 470	35V Electrolytic	AD	△ C747	RC-KZ017SCEZZ	R 680p	4kV Ceramic	AD
C511	VCKYPA2HB102K	R 1000p	500V Ceramic	AA	C750	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C512	VCFYSA1HB824J	R 0.82	50V M.Polypro	AC	C801	VCEAGA1HW475M	R 4.7	50V Electrolytic	AB
C513	VCFYSA1HB824J	R 0.82	50V M.Polypro	AC	C802	RC-QZA103TAYK	R 0.01	50V Mylar	AA
C514	VCEAGA1HW105M	R 1	50V Electrolytic	AC	C803	RC-QZA103TAYK	R 0.01	50V Mylar	AA
C515	VCEACA1HC105M	R 1	50V Electrolytic	AC	C804	RC-QZA103TAYK	R 0.01	50V Mylar	AA
C518	VCQYTA1HM392K	R 3900p	50V MYLAR	AB	C805	VCEAGA1CW107M	R 100	16V Electrolytic	AB
C519	RC-QZA472TAYK	R 4700p	50V Mylar	AA	C806	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C601	VCEAGA1CW476M	R 47	16V Electrolytic	AB	C807	VCEAGA1CW107M	R 100	16V Electrolytic	AB
C602	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C808	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C603	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C809	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C604	VCEAGA1CW107M	R 100	16V Electrolytic	AB	C810	VCCCPA1HH120J	R 12p	50V Ceramic	AA
C605	VCEAGA1CW476M	R 47	16V Electrolytic	AB	C811	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C606	VCEAGA1CW476M	R 47	16V Electrolytic	AB	C812	VCEAGA1CW107M	R 100	16V Electrolytic	AB
C607	VCFYHA1HA334J	R 0.33	50V M.Polypro	AC	C813	RC-QZA104TAYK	R 0.1	50V Mylar	AB
C608	RC-QZA103TAYK	R 0.01	50V Mylar	AA	C814	RC-QZA104TAYK	R 0.1	50V Mylar	AB
C609	VCEAGA1HW105M	R 1	50V Electrolytic	AC	C815	VCEAGA1HW105M	R 1	50V Electrolytic	AC
C610	VCFYSB2EB823J	R 0.082	250V M.Polypro	AD	C816	RC-QZA103TAYK	R 0.01	50V Mylar	AA
C611	VCKYPA2HB102K	R 1000p	500V Ceramic	AA	C817	VCEAGA1CW227M	R 220	16V Electrolytic	AC
C612	RC-KZ0046CEZZ	R 270p	2kV Ceramic	AB	C820	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C613	VCFFPD2DB434J	R 0.43	200V M.Polypro	AE	C822	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C614	VCEAGA1CW106M	R 10	16V Electrolytic	AA	C901	RC-QZA104TAYK	R 0.1	50V Mylar	AB
C615	VCQPSD2DA224J	R 0.22	200V M.Polypro	AD	C1001	VCCSPA1HL330J	R 33p	50V Ceramic	AA
C616	VCFFPD3CA822H	R 8200p	1600V M.Polypro	AE	C1002	VCCSPA1HL330J	R 33p	50V Ceramic	AA
C617	RC-QZA104TAYK	R 0.1	50V Mylar	AB	C1003	VCCSPA1HL330J	R 33p	50V Ceramic	AA
C619	VCEAGA2AW106M	R 10	100V Electrolytic	AC	C1004	VCCSPA1HL330J	R 33p	50V Ceramic	AA
△ C620	VCEAGA1HW105M	R 1	50V Electrolytic	AC	C1005	VCEAGA1HW105M	R 1	50V Electrolytic	AC
△ C622	VCEAGA1HW105M	R 1	50V Electrolytic	AC	C1006	VCEAGA1AW107M	R 100	10V Electrolytic	AB
△ C630	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C1007	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C636	VCEAGA1CW476M	R 47	16V Electrolytic	AB	C1008	VCEAGA1AW476M	R 47	10V Electrolytic	AA
C650	VCFYSA1HB224J	R 0.22	50V M.Polypro	AB	C1009	VCEAGA1CW106M	R 10	16V Electrolytic	AA
C653	VCKYAT1EX103N	R 0.01	25V Ceramic	AA	C1010	VCEAGA1CW106M	R 10	16V Electrolytic	AA
C654	VCEAGA1CW476M	R 47	16V Electrolytic	AB	C1011	VCKYPA1HB101K	R 100p	50V Ceramic	AA
C655	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA	C1012	VCKYAT1EX103N	R 0.01	25V Ceramic	AA
					C1013	VCCSPA1HL471J	R 470p	50V Ceramic	AA
					C1014	VCCSPA1HL560J	R 56p	50V Ceramic	AA
					C1015	VCEAGA1CW476M	R 47	16V Electrolytic	AB
					C1016	VCEAGA0JW107M	R 100	6.3V Electrolytic	AB

Ref. No.	Part No.	★	Description	Code
PWB-A DUNTK9322WEY5				
MAIN UNIT (Continued)				
C1017	VCKYPA1HF103Z	R 0.01	50V Ceramic	AA
C1018	VCCSPA1HL680J	R 68p	50V Ceramic	AA
C1019	VCCSPA1HL680J	R 68p	50V Ceramic	AA
C1020	VCEAGA0JW107M	R 100	6.3V Electrolytic	AB
C1021	VCCSPA1HL181J	R 180p	50V Ceramic	AA
C1022	VCKYMN1CY103N	R 0.01	16V Ceramic	AA
C1023	VCKYMN1CY103N	R 0.01	16V Ceramic	AA
C1024	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1025	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1026	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1027	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1028	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1029	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1030	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1031	VCKYD41CY103N	R 0.01	16V Ceramic	AA
C1032	VCKYD41CY103N	R 0.01	16V Ceramic	AA

RESISTORS

R201	VRD-RA2BE680J	R 68	1/8W Carbon	AA
R202	VRD-RA2BE680J	R 68	1/8W Carbon	AA
R206	VRD-RA2BE680J	R 68	1/8W Carbon	AA
R207	VRD-RA2BE392J	R 3.9k	1/8W Carbon	AA
R209	VRD-RA2BE122J	R 1.2k	1/8W Carbon	AA
R210	VRD-RA2BE122J	R 1.2k	1/8W Carbon	AA
R212	VRD-RA2BE101J	R 100	1/8W Carbon	AB
R213	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R214	VRD-RA2BE222J	R 2.2k	1/8W Carbon	AA
R215	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R218	VRD-RA2BE273J	R 27k	1/8W Carbon	AA
R219	VRD-RA2BE154J	R 150k	1/8W Carbon	AA
R220	VRD-RA2BE184J	R 180k	1/8W Carbon	AA
R221	VRD-RA2BE223J	R 22k	1/8W Carbon	AA
R222	VRD-RA2BE472J	R 4.7k	1/8W Carbon	AA
R223	VRD-RA2BE472J	R 4.7k	1/8W Carbon	AA
R224	VRD-RA2BE472J	R 4.7k	1/8W Carbon	AA
R225	VRD-RA2BE472J	R 4.7k	1/8W Carbon	AA
R226	VRD-RA2EE120J	R 12	1/4W Carbon	AA
R227	VRD-RA2EE120J	R 12	1/4W Carbon	AA
R228	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R229	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R230	VRD-RA2BE153J	R 15k	1/8W Carbon	AA
R231	VRD-RA2BE473J	R 47k	1/8W Carbon	AA
R232	VRD-RA2BE473J	R 47k	1/8W Carbon	AA
R233	VRD-RA2BE473J	R 47k	1/8W Carbon	AA
R234	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R235	VRD-RA2BE472J	R 4.7k	1/8W Carbon	AA
R237	VRD-RA2BE472J	R 4.7k	1/8W Carbon	AA
R238	VRS-VV3DB153J	R 15k	2W Metal Oxide	AA
R242	VRD-RA2BE151J	R 150	1/8W Carbon	AA
R243	VRD-RA2BE473J	R 47k	1/8W Carbon	AA
R244	VRD-RA2BE273J	R 27k	1/8W Carbon	AA
R247	VRD-RA2BE222J	R 2.2k	1/8W Carbon	AA
R249	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R250	VRD-RA2BE393J	R 39k	1/8W Carbon	AA
R301	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R302	VRD-RA2BE332J	R 3.3k	1/8W Carbon	AA
R303	VRD-RA2BE392J	R 3.9k	1/8W Carbon	AA
R304	VRD-RA2BE392J	R 3.9k	1/8W Carbon	AA
R305	VRD-RA2BE473J	R 47k	1/8W Carbon	AA
R306	VRD-RA2BE100J	R 10	1/8W Carbon	AA
R308	VRD-RA2BE153J	R 15k	1/8W Carbon	AA
R309	VRD-RA2BE123J	R 12k	1/8W Carbon	AA
R310	VRD-RA2BE104J	R 100k	1/8W Carbon	AA
R313	VRD-RA2BE273J	R 27k	1/8W Carbon	AA
R314	VRD-RA2BE332J	R 3.3k	1/8W Carbon	AA

Ref. No.	Part No.	★	Description	Code
R315	VRD-RA2BE563J	R 56k	1/8W Carbon	AA
R316	VRD-RA2BE123J	R 12k	1/8W Carbon	AA
R317	VRD-RA2BE123J	R 12k	1/8W Carbon	AA
R318	VRD-RA2BE681J	R 680	1/8W Carbon	AA
R319	VRD-RA2BE393J	R 39k	1/8W Carbon	AA
R320	VRD-RA2BE223J	R 22k	1/8W Carbon	AA
R321	VRD-RA2BE473J	R 47k	1/8W Carbon	AA
R322	VRN-VV3DB2R2J	R 2.2	2W Metal Film	AB
R324	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R328	VRD-RA2BE472J	R 4.7k	1/8W Carbon	AA
R401	VRD-RA2EE750J	R 75	1/4W Carbon	AA
R402	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R406	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R408	VRD-RA2BE222J	R 2.2k	1/8W Carbon	AA
R409	VRD-RA2BE824J	R 820k	1/8W Carbon	AA
R415	VRD-RA2BE101J	R 100	1/8W Carbon	AB
R416	VRD-RM2HD470J	R 47	1/2W Carbon	AA
R417	VRD-RA2EE750J	R 75	1/4W Carbon	AA
R418	VRD-RA2BE223J	R 22k	1/8W Carbon	AA
R419	VRD-RA2BE223J	R 22k	1/8W Carbon	AA
R420	VRD-RA2BE153J	R 15k	1/8W Carbon	AA
R421	VRD-RM2HD470J	R 47	1/2W Carbon	AA
R422	VRD-RA2BE222J	R 2.2k	1/8W Carbon	AA
R504	VRD-RA2BE221J	R 220	1/8W Carbon	AA
R506	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R510	VRD-RM2HD1R5J	R 1.5	1/2W Carbon	AA
R511	VRD-RA2BE333J	R 33k	1/8W Carbon	AA
R513	VRD-RA2BE273J	R 27k	1/8W Carbon	AA
R514	VRD-RA2BE563J	R 56k	1/8W Carbon	AA
R515	VRD-RA2EE220J	R 22	1/4W Carbon	AA
R516	VRD-RM2HD331J	R 330	1/2W Carbon	AA
R517	VRD-RA2BE223J	R 22k	1/8W Carbon	AA
R518	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R519	VRD-RM2HD152J	R 1.5k	1/2W Carbon	AA
R601	VRD-RA2BE224J	R 220k	1/8W Carbon	AA
R602	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R604	VRD-RA2BE391J	R 390	1/8W Carbon	AA
R605	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
R606	VRD-RA2BE681J	R 680	1/8W Carbon	AA
R607	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R608	VRD-RM2HD472J	R 4.7k	1/2W Carbon	AA
R609	VRS-KT3LB332J	R 3.3k	3W Metal Oxide	AC
R610	VRD-RA2BE822J	R 8.2k	1/8W Carbon	AA
R611	VRW-KQ3NC4R7K	R 4.7	7W Cement	AE
△ R612	VRG-PD2HD820J	R 82	1/2W Fuse Resistor	AC
R613	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R617	VRS-VV3AB330J	R 33	1W Metal Oxide	AA
R618	VRD-RM2HD102J	R 1k	1/2W Carbon	AA
R619	VRD-RA2BE393J	R 39k	1/8W Carbon	AA
△ R620	RR-XZ0085CEZZ	R 3.9	1/4W Fuse Resistor	AC
R621	VRN-VV3ABR82J	R 0.82	1W Metal Film	AA
R622	VRD-RM2HD223J	R 22k	1/2W Carbon	AA
△ R623	VRD-RA2EE683G	R 68k	1/4W 2% Carbon	AB
△ R624	VRD-RA2BE123G	R 12k	1/8W 2% Carbon	AA
R625	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
△ R630	VRD-RA2BE123J	R 12k	1/8W Carbon	AA
△ R631	VRD-RA2BE102J	R 1k	1/8W Carbon	AA
△ R633	VRD-RA2BE562J	R 5.6k	1/8W Carbon	AA
R634	VRD-RM2HD101J	R 100	1/2W Carbon	AA
R635	VRD-RA2BE154J	R 150k	1/8W Carbon	AA
R640	VRD-RM2HD682J	R 6.8k	1/2W Carbon	AA
△ R642	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R645	VRN-VV3LB5R6J	R 5.6	3W Metal Film	AC
R651	VRD-RM2HD101J	R 100	1/2W Carbon	AA
R652	VRS-VV3DB390J	R 39	2W Metal Oxide	AA
R653	VRD-RA2BE822J	R 8.2k	1/8W Carbon	AA
R654	VRD-RM2HD560J	R 56	1/2W Carbon	AA
△ R657	VRD-RA2BE103J	R 10k	1/8W Carbon	AA
R658	VRD-RM2HD470J	R 47	1/2W Carbon	AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A DUNTK9322WEY5									
MAIN UNIT (Continued)									
R660	VRD-RA2BE681J	R	680 1/8W Carbon	AA	R1028	VRD-RA2BE332J	R	3.3k 1/8W Carbon	AA
R701	VRW-KV3HC1R5K	R	1.5 5W Cement	AE	R1030	VRD-RA2BE101J	R	100 1/8W Carbon	AB
R702	VRW-KQ4AC2R7K	R	2.7 10W Cement	AE	R1031	VRD-RA2BE333J	R	33k 1/8W Carbon	AA
R703	VRS-KT3LB562J	R	5.6k 3W Metal Oxide	AC	R1032	VRD-RA2BE683J	R	68k 1/8W Carbon	AA
R704	VRN-RV3DB4R7J	R	4.7 2W Metal Film	AB	R1034	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA
R705	VRN-VV3AB3R3J	R	3.3 1W Metal Film	AA	R1035	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA
R706	VRD-RA2BE124J	R	120k 1/8W Carbon	AA	R1036	VRD-RA2BE182J	R	1.8k 1/8W Carbon	AA
R707	VRD-RA2BE270J	R	27 1/8W Carbon	AA	R1037	VRD-RA2BE103J	R	10k 1/8W Carbon	AA
R709	VRS-KT3LB562J	R	5.6k 3W Metal Oxide	AC	R1038	VRD-RA2BE333J	R	33k 1/8W Carbon	AA
R710	VRD-RA2BE392J	R	3.9k 1/8W Carbon	AA	R1039	VRD-RA2BE271J	R	270 1/8W Carbon	AA
R712	VRD-RA2BE821J	R	820 1/8W Carbon	AA	R1040	VRD-RA2BE271J	R	270 1/8W Carbon	AA
R715	VRD-RA2BE153J	R	15k 1/8W Carbon	AA	R1041	VRD-RA2BE103J	R	10k 1/8W Carbon	AA
R716	VRD-RA2BE180J	R	18 1/8W Carbon	AA	R1042	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA
R717	VRD-RA2BE101J	R	100 1/8W Carbon	AB	R1043	VRD-RA2BE103J	R	10k 1/8W Carbon	AA
R718	VRN-VV3ABR22J	R	0.22 1W Metal Film	AA	R1044	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA
△ R719	VRC-UA2HG825K	R	8.2M 1/2W Solid	AA	R1045	VRD-RM2HD180J	R	18 1/2W Carbon	AA
△ R720	VRC-UA2HG825K	R	8.2M 1/2W Solid	AA	R1046	VRD-RM2HD180J	R	18 1/2W Carbon	AA
R721	VRD-RM2HD1R0J	R	1.0 1/2W Carbon	AA	R1047	VRD-RA2BE472J	R	4.7k 1/8W Carbon	AA
R722	VRN-SV2HBR47J	R	0.47 1/2W Metal Film	AB	R1049	VRD-RA2BE473J	R	47k 1/8W Carbon	AA
R723	VRS-VV3LB272J	R	2.7k 3W Metal Oxide	AB	R1050	VRD-RA2BE473J	R	47k 1/8W Carbon	AA
R724	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	R1051	VRD-RA2BE393J	R	39k 1/8W Carbon	AA
R734	VRD-RM2HD184J	R	180k 1/2W Carbon	AA	R1052	VRD-RA2BE272J	R	2.7k 1/8W Carbon	AA
R736	VRD-RM2HD184J	R	180k 1/2W Carbon	AA	R1055	VRD-RM2HD101J	R	100 1/2W Carbon	AA
R802	VRD-RA2BE561J	R	560 1/8W Carbon	AA	R1057	VRD-RA2BE273J	R	27k 1/8W Carbon	AA
R803	VRD-RA2BE561J	R	560 1/8W Carbon	AA	R1058	VRD-RA2BE822J	R	8.2k 1/8W Carbon	AA
R804	VRD-RA2BE561J	R	560 1/8W Carbon	AA	R1059	VRD-RA2BE472J	R	4.7k 1/8W Carbon	AA
R805	VRD-RA2BE222J	R	2.2k 1/8W Carbon	AA	R1060	VRD-RA2BE222J	R	2.2k 1/8W Carbon	AA
R809	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	R1061	VRD-RA2BE103J	R	10k 1/8W Carbon	AA
R810	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	R1062	VRD-RM2HD180J	R	18 1/2W Carbon	AA
R811	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	R1063	VRD-RA2BE103J	R	10k 1/8W Carbon	AA
R812	VRD-RA2BE101J	R	100 1/8W Carbon	AB	R1064	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R813	VRD-RA2BE101J	R	100 1/8W Carbon	AB	R1065	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R814	VRD-RA2BE273J	R	27k 1/8W Carbon	AA	R1067	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA
R815	VRD-RA2BE223J	R	22k 1/8W Carbon	AA	R1068	VRD-RA2BE683J	R	68k 1/8W Carbon	AA
R816	VRD-RA2BE473J	R	47k 1/8W Carbon	AA	R1070	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA
R817	VRD-RA2BE473J	R	47k 1/8W Carbon	AA	R1072	VRD-RA2BE153J	R	15k 1/8W Carbon	AA
R819	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	R1075	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R820	VRD-RA2BE101J	R	100 1/8W Carbon	AB	R1076	VRD-RA2BE102J	R	1k 1/8W Carbon	AA
R821	VRD-RA2BE101J	R	100 1/8W Carbon	AB	SWITCHES				
R822	VRD-RA2BE101J	R	100 1/8W Carbon	AB	△ S701	QSW-P0588CEZZ	R	Switch, POWER	AP
R823	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	S1001	QSW-K0095CEZZ	R	Switch, CH UP	AB
R824	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	S1002	QSW-K0095CEZZ	R	Switch, CH DOWN	AB
R825	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	S1003	QSW-K0095CEZZ	R	Switch, VOL UP	AB
R826	VRD-RA2BE223J	R	22k 1/8W Carbon	AA	S1004	QSW-K0095CEZZ	R	Switch, VOL DOWN	AB
R1001	VRD-RA2BE472J	R	4.7k 1/8W Carbon	AA	S1005	QSW-K0095CEZZ	R	Switch, PRESET	AB
R1002	VRD-RA2BE472J	R	4.7k 1/8W Carbon	AA	S1006	QSW-B0015CEZZ	R	Switch, SET UP	AC
R1003	VRD-RA2BE472J	R	4.7k 1/8W Carbon	AA	MISCELLANEOUS PARTS				
R1004	VRD-RA2BE473J	R	47k 1/8W Carbon	AA	FB305	RBLN-0037CEZZ	R	Ferrite Bead	AB
R1005	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA	FB602	RBLN-0037CEZZ	R	Ferrite Bead	AB
R1006	VRD-RA2BE101J	R	100 1/8W Carbon	AB	FB702	RBLN-0037CEZZ	R	Ferrite Bead	AB
R1009	VRD-RA2BE101J	R	100 1/8W Carbon	AB	FB706	RBLN-0037CEZZ	R	Ferrite Bead	AB
R1011	VRD-RA2BE683J	R	68k 1/8W Carbon	AA	FB731	RBLN-0080CEZZ	R	Ferrite Bead	AD
R1012	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	FH701	QFSD1013CEZZ	R	Fuse Holder	AC
R1014	VRD-RA2BE472J	R	4.7k 1/8W Carbon	AA	FH702	QFSD1014CEZZ	R	Fuse Holder	AC
R1015	VRD-RA2BE332J	R	3.3k 1/8W Carbon	AA	△ F301	QFS-J1521CEZZ	R	Fuse	AF
R1016	VRD-RA2BE101J	R	100 1/8W Carbon	AB	△ F701	QFS-C3229CEZZ	R	Fuse, T3.15A	AD
R1017	VRD-RA2BE683J	R	68k 1/8W Carbon	AA	J401	QTANJ0429CEZZ	R	AV I/O Terminal	AH
R1018	VRD-RA2BE101J	R	100 1/8W Carbon	AB	P201	QPLGN0241CEZZ	R	Plug, 2pin (TP210)	AA
R1019	VRD-RA2BE101J	R	100 1/8W Carbon	AB	P302	QPLGN0441CEZZ	R	Plug, 4pin (S)	AB
R1021	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	P502	QPLGN0603CEZZ	R	Plug, 6pin (F)	AB
R1022	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	P602	QPLGN0441CEZZ	R	Plug, 4pin (H)	AB
R1023	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	P711	QPLGN0207CEZZ	R	Plug, 2pin (G)	AA
R1024	VRD-RA2BE683J	R	68k 1/8W Carbon	AA	P712	QPLGN0269GEZZ	R	Plug, 2pin (A)	AB
R1026	VRD-RA2BE102J	R	1k 1/8W Carbon	AA	P801	QPLGN0541CEZZ	R	Plug, 5pin (K)	AB
R1027	VRD-RA2BE562J	R	5.6k 1/8W Carbon	AA	P1001	QPLGN0441CEZZ	R	Plug, 4pin (BC)	AB
					RDA351	PRDAR0142PEFW	R	Heat Sink, IC351	AD
					RDA501	PRDAR0223PEFW	R	Heat Sink, IC501	AF

Ref. No.	Part No.	★	Description	Code
PWB-A DUNTK9322WEY5				
MAIN UNIT (Continued)				
RDA602	PRDAR0224PEFW	R	Heat Sink, Q602	AF
RDA701	PRDAR0222PEFW	R	Heat Sink, Q701	AH
RMC1001	RRMCU0222CEZZ	R	Remote Receiver	AL
SLD201	PSLDM0232PEFW	R	Shield	AD
SLD1001	PSLDM0233PEFW	R	Shield	AC

Ref. No.	Part No.	★	Description	Code
PWB-B DUNTK9323WEY5				
CRT SOCKET UNIT				
TRANSISTORS				
Q851	VS2SC3789//1E	R	2SC3789	AE
Q852	VS2SC3789//1E	R	2SC3789	AE
Q853	VS2SC3789//1E	R	2SC3789	AE
Q854	VS2SA1015Y/1E	R	2SA1015Y	AC

DIODES

D851	RH-DX0475CEZZ	R	Diode	AB
D852	RH-DX0475CEZZ	R	Diode	AB
D853	RH-DX0475CEZZ	R	Diode	AB

COIL

L851	VP-CF681K0000	R	Peaking	680μH	AB
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CAPACITORS

C851	VCCSPA1HL391J	R	390p	50V	Ceramic	AA
C852	VCCSPA1HL391J	R	390p	50V	Ceramic	AA
C853	VCCSPA1HL391J	R	390p	50V	Ceramic	AA
△ C854	RC-KZ0150CEZZ	R	1000p	3kV	Ceramic	AB
C861	VCEAGA1CW106M	R	10	16V	Electrolytic	AA
C870	VCEAGA1CW106M	R	10	16V	Electrolytic	AA
C865	VCKYPA1HB102K	R	1000p	50V	Ceramic	AA
C866	VCEAGA2EW106M	R	10	250V	Electrolytic	AC

RESISTORS

R851	VRD-RA2BE471J	R	470	1/8W	Carbon	AA
R856	VRD-RA2BE471J	R	470	1/8W	Carbon	AA
R862	VRD-RA2BE471J	R	470	1/8W	Carbon	AA
R865	VRD-RA2BE471J	R	470	1/8W	Carbon	AA
R852	VRD-RA2BE561J	R	560	1/8W	Carbon	AA
R858	VRD-RA2BE561J	R	560	1/8W	Carbon	AA
R864	VRD-RA2BE561J	R	560	1/8W	Carbon	AA
R859	VRD-RA2BE152J	R	1.5k	1/8W	Carbon	AA
R871	VRD-RA2BE152J	R	1.5k	1/8W	Carbon	AA
R860	VRS-VV3DB123J	R	12k	2W	Metal Oxide	AA
R866	VRS-VV3DB123J	R	12k	2W	Metal Oxide	AA
R868	VRS-VV3DB123J	R	12k	2W	Metal Oxide	AA
R867	VRD-RM2HD272J	R	2.7k	1/2W	Carbon	AA
R898	VRD-RM2HD272J	R	2.7k	1/2W	Carbon	AA
R899	VRD-RM2HD272J	R	2.7k	1/2W	Carbon	AA
R870	VRD-RA2BE222J	R	2.2k	1/8W	Carbon	AA
R875	VRD-RA2BE560J	R	56	1/8W	Carbon	AA
R876	VRD-RA2BE560J	R	56	1/8W	Carbon	AA
R877	VRD-RA2BE560J	R	56	1/8W	Carbon	AA

MISCELLANEOUS PARTS

P851	QPLGN0441CEZZ	R	Plug, 4pin (H)	AB
P852	QPLGN0541CEZZ	R	Plug, 5pin (K)	AB
△ SC851	QSOCV0931CEZZ	R	CRT Socket	AK

---- End of Main Unit ----

---- End of CRT Socket Unit ----

Ref. No.	Part No.	★	Description	Code
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MISCELLANEOUS PARTS

⚠	QACCZ2008PEZZ	R	AC Cord	AM
	VSP9050PB108A	R	Speaker	AP
	QCNW-2126PEZZ	R	Connecting Cord	AG
	QCNW-2127PEZZ	R	Connecting Cord	AG
	QCNW-2131PEZZ	R	Connecting Cord	AL

--- End of Miscellaneous Parts ---

SUPPLIED ACCESSORIES

ACCESSORIES

TINS-6580CEZZ	R	Operation Manual	
RRMCG1342PESA	R	Infrared R/C Unit	AU

ACCESSORIES (NOT REPLACEMENT ITEM)

UBATU0002AJZZ	—	Battery	—
TCAUA3093CEZZ	—	Caution Card	—

--- End of SUPPLIED ACCESSORIES ---

PACKING PARTS (NOT REPLACEMENT ITEM)

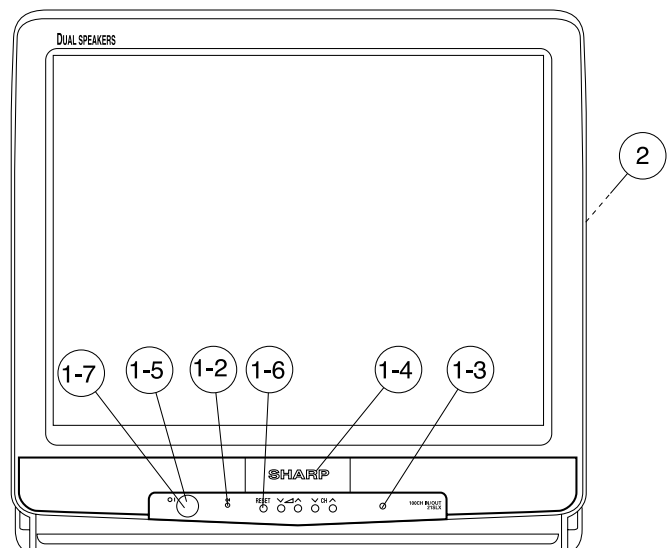
SPAKC5301CEZZ	-	Packing Case	—
SPAKP0099PEZZ	-	Wrapping Paper	—
SPAKX2801CEZZ	-	Packing Foam	—
SSAKA0031PEZZ	-	Polyethylene Bag	—
SSAKH0010PEZZ	-	Polyethylene Bag	—

--- End of Packing Parts ---

Ref. No.	Part No.	★	Description	Code
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CABINET PARTS

1-2	GCOVA0057PESA	R	LED Cover	AD
1-3	GCOVA0058PESA	R	R/C Cover	AD
1-4	HBDGB0019PESA	R	"SHARP" Badge	AD
1-5	JBTN-0209PESB		Power Button	
1-6	JBTN-0210PESB		Control Button	
1-7	MSPRC0005PEFW	R	Spring Power Button	AB
2	CCABB2261WEA0		Rear Cabinet Ass'y	



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